NUS CORPORATION
A Halliburton Company

FINAL DRAFT
PRELIMINARY ASSESSMENT
CALVIN KLEIN COSMETICS CORPORATION
PARSIPPANY, NEW JERSEY

FIELD INVESTIGATION TEAM ACTIVITIES AT UNCONTROLLED HAZARDOUS SUBSTANCES FACILITIES — ZONE I

NUS CORPORATION
SUPERFUND DIVISION

02-8903-07-PA
REV. NO. 0

FINAL DRAFT
PRELIMINARY ASSESSMENT
CALVIN KLEIN COSMETICS CORPORATION
PARSIPPANY, NEW JERSEY

PREPARED UNDER

TECHNICAL DIRECTIVE DOCUMENT NO. 02-8903-07
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

JUNE 14, 1989

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY:

JOANN L. WAGNER
PROJECT MANAGER

SUSAN ANDERSON
SITE MANAGER

REVIEWED/APPROVED BY:

RONALD M. NAMAN
FIT OFFICE MANAGER

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT

PART I: SITE INFORMATION

1. Site Name/Alias Calvin Klein Cosmetics Corp.

   Street 345 Walsh Drive

   City Parsippany State New Jersey Zip 07054

2. County Morris County Code 027 Cong. Dist. 11

3 EPA ID No. NJD048806616

4. Latitude 40° 52' 25" N Longitude 74° 27' 05" W

   USGS Quad. Morristown

5. Owner Calvin Klein Cosmetics Corp. Tel. No. (201) 263-1655

   Street 345 Walsh Drive

   City Parsippany State New Jersey Zip 07054

6. Operator Calvin Klein Cosmetics Corp. Tel. No. (201) 263-1655

   Street 345 Walsh Drive

   City Parsippany State New Jersey Zip 07054

7. Type of Ownership

   ☒ Private ☐ Federal ☐ State
   ☐ County ☐ Municipal ☐ Unknown ☐ Other _____

8. Owner/Operator Notification on File

   ☐ RCRA 3001 Date _____ ☐ CERCLA 103c Date _____
   ☐ None ☒ Unknown

9. Permit Information

Permit	Permit No.	Date Issued	Expiration Date	Comments
Unknown				

10. Site Status

    ☒ Active ☐ Inactive ☐ Unknown

11. Years of Operation April 1, 1984 to Present

12. Identify the types of waste units (e.g., landfill, surface impoundment, piles, stained soil, above- or below-ground tanks or containers, land treatment, etc.) on site. Initiate as many waste unit numbers as needed to identify all waste sources on site.

(a) Waste Management Areas

Waste Unit No.	Waste Unit Type	Facility Name for Unit
1	Underground Storage Tank	Underground Hazardous Waste Storage Tank.
2	Drum Storage	Drum Storage

(b) Other Areas of Concern

Identify any miscellaneous spills, dumping, etc. on site; describe the materials and identify their locations on site.

There are no known miscellaneous spills, incidents of dumping, etc. on site.

13. Information available from

Contact Amy Brochu Agency U.S. EPA Tel. No. (201) 906-6802

Preparer Susan Anderson Agency NUS Corp. Region 2 FIT Date 06/14/89

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following six items.

Waste Unit 1 - Underground Storage Tank, Underground Hazardous Waste Storage Tank

1. **Identify the RCRA status and permit history, if applicable, and the age of the waste unit.**

   Calvin Klein was originally listed as a Treatment, Storage, or Disposal (TSD) facility, but in 1986 it requested reclassification to generator only status since hazardous waste would be stored on site for less than 90 days and the underground hazardous waste storage tank was in the process of closure. The hazardous waste stainless steel storage tank was installed in 1980, and waste storage was initiated in January 1981. It was reported that Calvin Klein Cosmetics Corporation planned to move out of this facility in June of 1987.

2. **Describe the location of the waste unit and identify clearly on the site map.**

   The underground hazardous waste storage tank was located outside along the northeast corner of the Calvin Klein Cosmetics building.

3. **Identify the size or quantity of the waste unit (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.**

   The capacity of the hazardous waste storage tank was reported to be 12,000 gallons.

4. **Identify the physical state(s) of the waste type(s) as disposed of in the waste unit. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid, or gas.**

   The physical state of the waste as disposed of in the hazardous waste storage tank was reported to be liquid.

5. **Identify specific hazardous substance(s) known or suspected to be present in the waste unit.**

   The hazardous waste storage tank was reported to contain isopropyl alcohol, unspecified alcohol-based liquids, unspecified alcohols, floor washing liquids, unspecified spilled product, and unspecified products which failed quality assurance inspections.

6. **Describe the containment of the waste unit as it relates to contaminant migration via groundwater, surface water, and air.**

   The hazardous waste storage tank was reported to be in sound condition. No contaminants were found in the soil samples collected from the excavation pit from which the tank was removed.

Ref. Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following six items.

Waste Unit 2 - Drum Storage , Drum Storage

1. **Identify the RCRA status and permit history, if applicable, and the age of the waste unit.**

   Calvin Klein was originally listed as a Treatment, Storage, or Disposal (TSD) facility, but in 1986 it requested reclassification to generator only status since hazardous waste would be stored on site for less than 90 days and the underground hazardous waste storage tank was in the process of closure. After the closure of the underground hazardous waste storage tank, the hazardous wastes were accumulated in drums for less than 90 days and transported off site. It was reported that Calvin Klein Cosmetics Corporation planned to move out of this facility in June of 1987.

2. **Describe the location of the waste unit and identify clearly on the site map.**

   According to a revised site plan dated February 1987, the drum storage area was located in the southeast corner of the Calvin Klein Cosmetics building.

3. **Identify the size or quantity of the waste unit (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.**

   The capacity of the drums is unknown; however, the quantity of hazardous substances in the drums was reported to be less than 25 gallons per month.

4. **Identify the physical state(s) of the waste type(s) as disposed of in the waste unit. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid, or gas.**

   The physical state of the waste as disposed of in the drums was reported to be liquid.

5. **Identify specific hazardous substance(s) known or suspected to be present in the waste unit.**

   The drums were reported to contain unspecified alcohols.

6. **Describe the containment of the waste unit as it relates to contaminant migration via groundwater, surface water, and air.**

   The condition of the drums is unknown. A memo concerning a site visit conducted by the New Jersey Department of Environmental Protection (NJDEP) on April 21, 1986 indicated that the facility was neat and clean.

Ref. Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9

PART III: HAZARD ASSESSMENT

GROUNDWATER ROUTE

1. **Describe the likelihood of a release of contaminant(s) to the groundwater as follows: observed, alleged, potential, or none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminant(s) to the facility.**

   There is little potential for a release of contaminants to the groundwater, as the underground storage tank was reported to be in sound condition and the drums were located inside the Calvin Klein Cosmetics building. Although the presence or absence of an impermeable liner beneath the underground tank is unknown, the NJDEP noted that no contamination had been detected in the soil samples collected from the excavation pit from which the tank had been removed. The drums were reportedly stored on a concrete base.

   Ref. Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9

2. **Describe the aquifer of concern; include information such as depth, thickness, geologic composition, permeability, overlying strata, confining layers, interconnections, discontinuities, depth to water table, groundwater flow direction.**

   The aquifer of concern consists of glacial moraine composed of silts, sandy silt, sandy gravel, and gravelly sand overlying and hydraulically connected to the Brunswick Formation. The Brunswick is characteristically composed of sandstone and shale. The approximate thickness of the aquifer, including the glacial moraine and the Brunswick Formation, may be as much as 6100 feet; the depth from the land surface to the water table is approximately 20 feet. The direction of the groundwater flow is southeast.

   Ref. Nos. 2, 10, 13

3. **Is a designated sole source aquifer within 3 miles of the site?**

   The basin aquifer systems underlying northwest New Jersey received sole source aquifer designation in May 1980 and June 1988.

   Ref. No. 11

4. **What is the depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer of concern?**

   The depth of the 12,000-gallon underground hazardous waste storage tank is unknown, but is assumed to have been at least 7 feet, as that was the diameter of the tank. The depth from the ground surface to the water table of the aquifer of concern is approximately 20 feet. Therefore, the depth from the lowest point of waste storage to the saturated zone of the aquifer of concern is approximately 13 feet.

   Ref. Nos. 2, 10, 13

5. **What is the permeability value of the least permeable continuous intervening stratum between the ground surface and the aquifer of concern?**

   The unsaturated zone consists of silts, sandy silt, sandy gravel, and gravelly sand. The permeability value ranges from 10^{-3} to 10^{-5} centimeters per second (cm/sec).

   Ref. Nos. 2, 10, 12

6. **What is the net annual precipitation for the area?**

The net annual precipitation is approximately 15 inches.

Ref. No. 12

7. **Identify uses of groundwater within 3 miles of the site (i.e., private drinking source, municipal source, commercial, industrial, irrigation, unusable).**

Groundwater is the primary source for drinking water and other uses throughout northern, central, and eastern Morris County.

Ref. Nos. 10, 11

8. **What is the distance to and depth of the nearest well that is currently used for drinking or irrigation purposes?**

Distance Approximately 4000 feet southeast **Depth** 129 feet

Ref. Nos. 13, 14

9. **Identify the population served by the aquifer of concern within a 3-mile radius of the site.**

The aquifer of concern is a sole source aquifer, serving approximately 49,900 people within the Parsippany-Troy Hills Township.

Ref. No. 10

SURFACE WATER ROUTE

10. **Describe the likelihood of a release of contaminant(s) to surface water as follows: observed, alleged, potential, or none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminants to the facility.**

A release of contaminants to the surface water is unlikely because the underground storage tank was reported to be in sound condition and the drums were located inside the facility on a concrete pad.

Ref. Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9

11. **Identify and locate the nearest downslope surface water. If possible, include a description of possible surface drainage patterns from the site.**

The nearest downslope surface water is an unnamed pond located southeast of the site. A stream connects this unnamed pond with another pond to the east. Although there are storm drains to the northeast of the Calvin Klein building, there are steep slopes from the site to the east and to the south. Runoff would migrate from the site in a southeasterly direction and cross over a secondary road to the westernmost unnamed pond and then be carried by the stream to the eastern pond. Troy Brook flows from the pond and continues through the wetlands located approximately 3.5 miles from the site.

Ref. Nos. 14, 15

12. **What is the facility slope in percent? (Facility slope is measured from the highest point of deposited hazardous waste to the most downhill point of the waste area or to where contamination is detected.)**

The facility slope as defined above cannot be calculated, as there is no documentation of on-site hazardous waste disposal or contamination. The average site slope is estimated to be less than 3 percent.

Ref. Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15

13. **What is the slope of the intervening terrain in percent? (Intervening terrain slope is measured from the most downhill point of the waste area to the probable point of entry to surface water.)**

The intervening terrain slope as defined above cannot be calculated, as there is no waste area from which it is possible for contaminants to migrate to surface water.

Ref. Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15

14. **What is the 1-year 24-hour rainfall?**

The 1-year 24-hour rainfall is approximately 3 inches.

Ref. No. 12

15. **What is the distance to the nearest downslope surface water? Measure the distance along a course that runoff can be expected to follow.**

The nearest downslope surface water is located approximately 3000 feet southeast of the site.

Ref. No. 14

16. **Identify uses of surface waters within 3 miles downstream of the site (i.e., drinking, irrigation, recreation, commercial, industrial, not used).**

The unnamed ponds and Troy Brook are presumed to be used for recreation. The Boonton Reservoir, which is used as a source of public water supply, is located within 3 miles of the site, but is not downstream from the site. The intake in the reservoir is not within 3 miles of the site.

Ref. Nos. 14, 16, 18

17. **Describe any wetlands, greater than 5 acres in area, within 2 miles downstream of the site. Include whether it is a freshwater or coastal wetland.**

There are no wetlands, greater than 5 acres in area, within 2 miles downstream of the site.

Ref. No. 14

18. **Describe any critical habitats of federally listed endangered species within 2 miles of the site along the migration path.**

There are no critical habitats of federally listed endangered species within 2 miles of the site.

Ref. Nos. 14, 17

19. What is the distance to the nearest sensitive environment along or contiguous to the migration path (if any exist within 2 miles)?

There are no sensitive environments within 2 miles.

Ref. Nos. 14, 17

20. Identify the population served or acres of food crops irrigated by surface water intakes within 3 miles downstream of the site and the distance to the intake(s).

The nearest public supply surface water intake is just outside of the 3-mile radius and is not downstream of the site. There are no other known surface water intakes for potable supply or irrigation within 3 miles downstream of the site.

Ref. Nos. 14, 16, 18

21. What is the state water quality classification of the water body of concern?

The New Jersey classification for Troy Brook is FW2-NT. The classifications of the ponds and of the Boonton Reservoir are not known.

Ref. Nos. 21, 22

22. Describe any apparent biota contamination that is attributable to the site.

There are no known documented incidents of biota contamination that could be attributed to the site.

Ref. Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 15

AIR ROUTE

23. Describe the likelihood of a release of contaminant(s) to the air as follows: observed, alleged, potential, none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminant(s) to the facility.

There have been no reported incidents of a release of contaminants to the air at this site. Drums were stored inside the facility, and the hazardous waste tank was located below ground.

Ref. Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9

24. What is the population within a 4-mile radius of the site?

The population within a 4-mile radius of the site is approximately 91,700.

Ref. No. 19

FIRE AND EXPLOSION

25. Describe the potential for a fire or explosion to occur with respect to the hazardous substance(s) known or suspected to be present on site. Identify the hazardous substance(s) and the method of storage or containment associated with each.

There is little potential for a fire or explosion to occur because the underground storage tank was removed, and drummed waste is accumulated at a rate of only one drum per month.

Ref. Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9

26. What is the population within a 2-mile radius of the hazardous substance(s) at the facility?

The population within a 2-mile radius of the site is approximately 27,200.

Ref. No. 19

DIRECT CONTACT/ON-SITE EXPOSURE

27. Describe the potential for direct contact with hazardous substance(s) stored in any of the waste units on site or deposited in on-site soils. Identify the hazardous substance(s) and the accessibility of the waste unit.

There was little potential for direct contact with hazardous substances stored in the waste units on site. The alcohols were stored in an underground stainless steel storage tank, and the drums were stored inside the facility.

Ref. Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9

28. How many residents live on a property whose boundaries encompass any part of an area contaminated by the site?

There are no known areas of contamination attributable to the site.

Ref. Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9

29. What is the population within a 1-mile radius of the site?

The population within a 1-mile radius of the site is approximately 3,200.

Ref. No. 18

PART IV: SITE SUMMARY AND RECOMMENDATIONS

The Calvin Klein Cosmetics Corporation Site is located in a commercial park area in Parsippany, Morris County, New Jersey. The site is owned by Calvin Klein Cosmetics Corporation. Operations began on April 1, 1984; it was reported that Calvin Klein Cosmetics would be vacating the facility in June of 1987. However, during an off-site reconnaissance conducted by NUS Corporation Region 2 FIT on April 4, 1989, it was observed that the facility was in operation. It was reported that waste storage was initiated in January 1981 and that the facility's 12,000-gallon stainless steel underground hazardous waste storage tank was scheduled for removal in March 1987. Calvin Klein was originally listed as a Treatment, Storage, or Disposal (TSD) facility, but in 1986 it requested reclassification to generator only status since hazardous waste would be stored on site for less than 90 days and the 12,000-gallon underground hazardous waste storage tank was in the process of closure.

The facility is a single-story building which covers 84,100 ft^2. The facility manufactured and packaged perfumes. Hazardous and nonhazardous wastes were generated on site. The hazardous raw materials were stored in drums in the "Compounding and Laboratory Area" in the northeast corner of the building. These materials were carried through pipes into the production and packaging areas via filling lines and machines. The completed product (bottled perfume) was temporarily stored in the warehouse section. The filling lines and packaging equipment were cleaned by flushing with water or occasionally by using alcohol or alcohol-based liquids. The liquid flushings were drained through a 4-inch-diameter line to the 12,000-gallon underground hazardous waste storage tank. Isopropyl alcohol, flooring-washing liquids, spilled product, and products which failed quality assurance inspections were also drained to the 12,000-gallon tank.

The 12,000-gallon stainless steel underground hazardous waste storage tank was located outside underneath the parking lot along the northeast corner of the Calvin Klein Cosmetics building. It was reported that after the closure of the 12,000-gallon tank, the hazardous wastes were accumulated in drums on a concrete base located in the southeast corner of the facility for less than 90 days. The drums were reported to contain unspecified alcohols. The 12,000-gallon stainless steel underground hazardous waste storage tank was reported to be in sound condition, and no contaminants were detected in the soil samples collected from the excavation pit from which the tank was removed. There were no reported incidents of leakage from the drums inside the facility. Therefore, a minimal potential for direct contact and for a release of contaminants to the environment is assumed.

There are no known enforcement actions pending against Calvin Klein Cosmetics Corporation. The site is given a recommendation of **NO FURTHER REMEDIAL ACTION PLANNED (NFRAP)** due to the closure of the 12,000-gallon underground hazardous waste storage tank and the storage of wastes inside the facility for less than 90 days.

ATTACHMENT 1

CALVIN KLEIN COSMETICS CORPORATION
PARSIPPANY, NEW JERSEY

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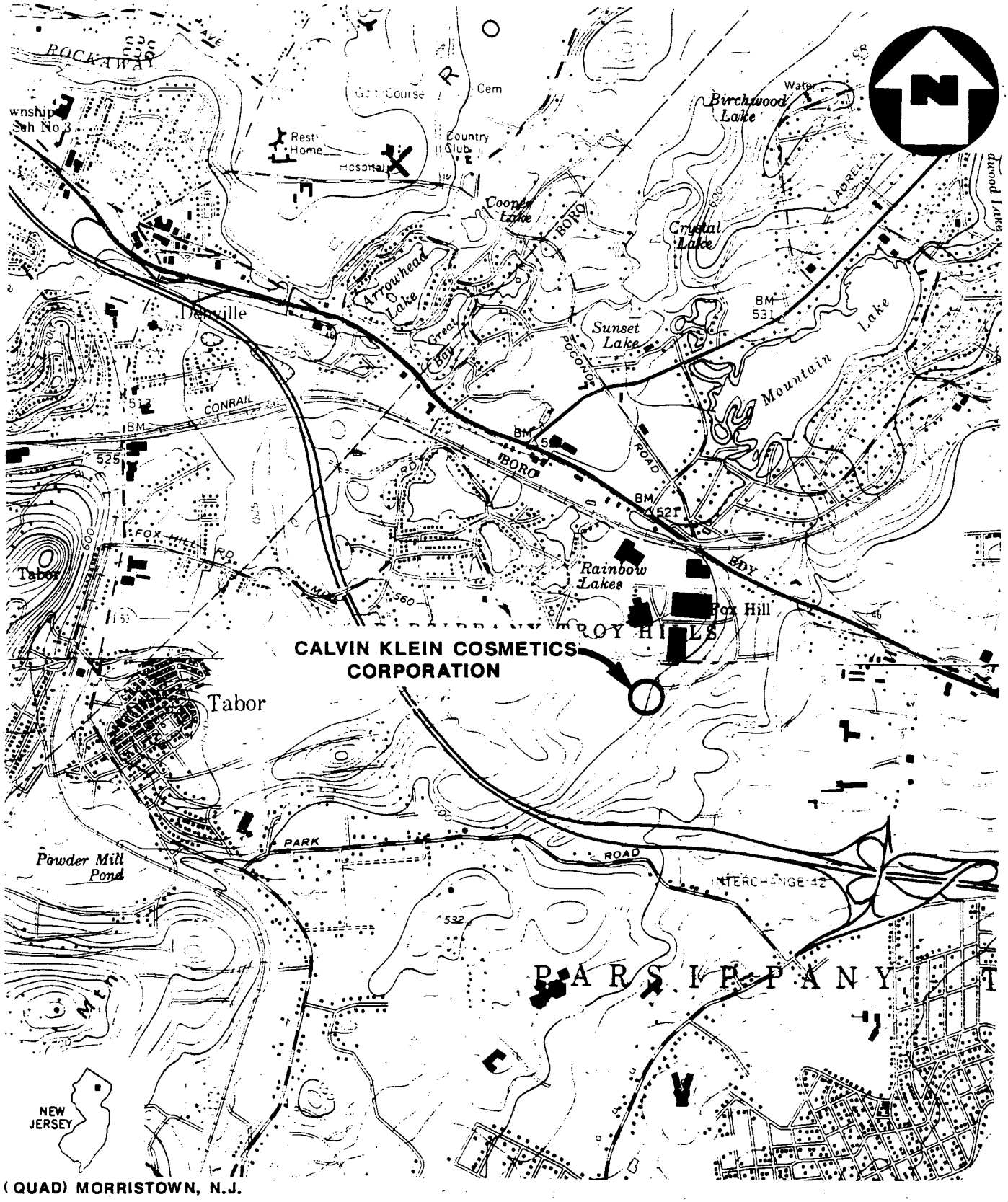


SITE LOCATION MAP

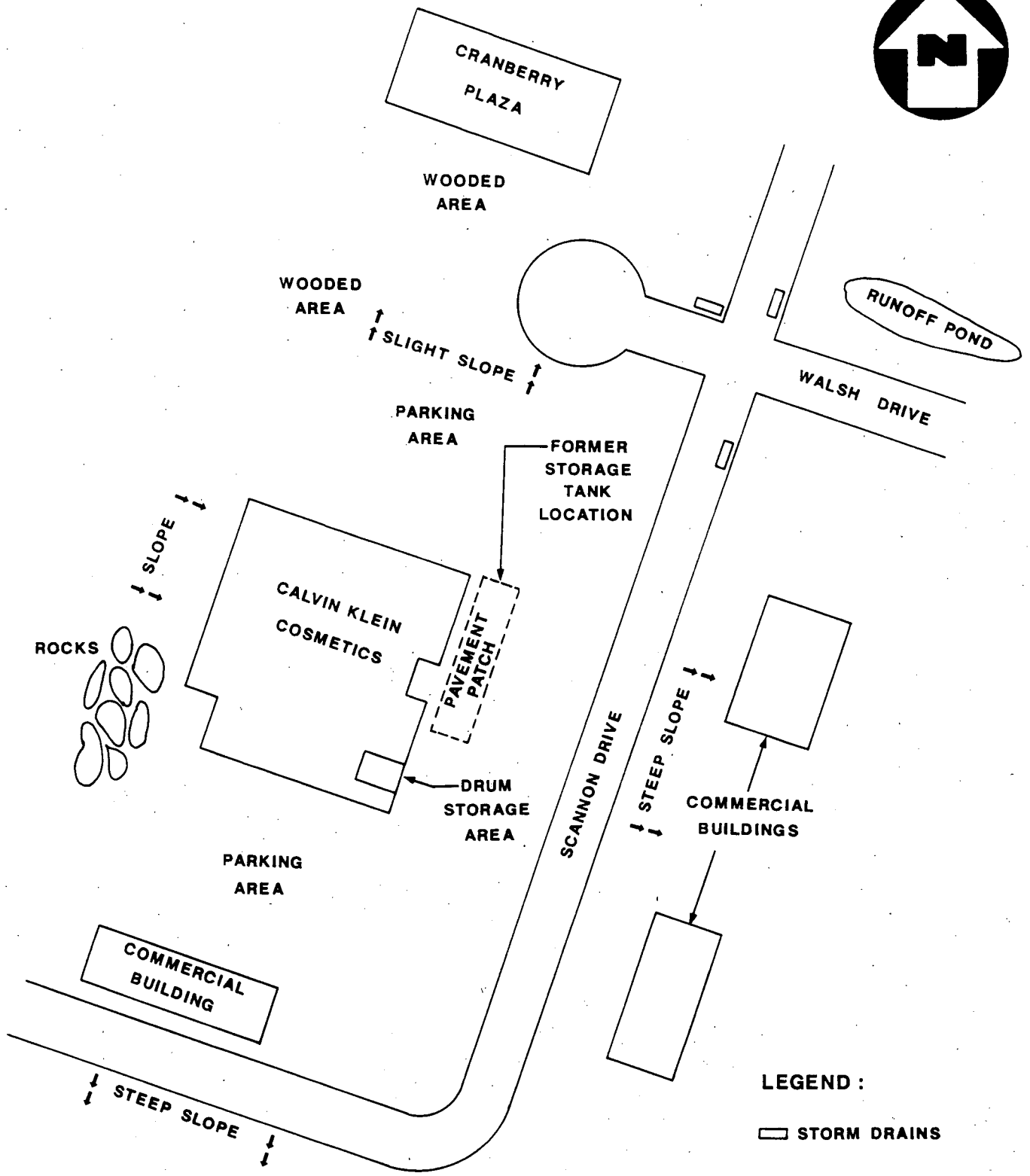
CALVIN KLEIN COSMETICS CORPORATION

PARSIPPANY, N.J.

SCALE: 1"= 2000'

FIGURE 1

NUS CORPORATION



SITE MAP

CALVIN KLEIN COSMETICS CORPORATION

PARSIPPANY, N.J.

(SCALE UNKNOWN)

FIGURE 2

NUS CORPORATION

EXHIBIT A

PHOTOGRAPH LOG

CALVIN KLEIN COSMETICS CORPORATION
PARSIPPANY, NEW JERSEY

OFF-SITE RECONNAISSANCE: APRIL 4, 1989

CALVIN KLEIN COSMETICS CORPORATION
PARSIPPANY, NEW JERSEY
APRIL 4, 1989

Rev. No. 0

PHOTOGRAPH INDEX

Photo Number	Description	Time
1P-9	Looking at southern side of Calvin Klein Cosmetics, showing garage entrance and slope.	1132
1P-10	Looking at northern side of Calvin Klein Cosmetics, and parking area.	1135
1P-11	Looking at eastern side of Calvin Klein Cosmetics, showing pavement patch and parking area.	1140

Photographs 1P-9 and 1P-11 were taken by Paul Bauer.
Photograph 1P-10 was taken by Gerald Hannay.

1P-9 April 4, 1989 1132
Looking at southern side of Calvin Klein Cosmetics, showing garage entrance and slope.

1P-10 April 4, 1989 1135
Looking at northern side of Calvin Klein Cosmetics, and parking area.

CALVIN KLEIN COSMETICS CORPORATION
PARSIPPANY, NEW JERSEY

1P-11 April 4, 1989 1140
Looking at eastern side of Calvin Klein Cosmetics , showing pavement patch and parking area.

ATTACHMENT 2

REFERENCES

1. New Jersey Department of Environmental Protection, Memo from Richard Cestone to file, concerning site visit to Calvin Klein Corporation, April 24, 1986.

2. Underground Hazardous Waste Storage Tank Closure Plan for Calvin Klein Cosmetics Corporation. Prepared by Storch Engineers, June 1986.

3. Letter from Keith A. Dempsey, Production Manager, Calvin Klein Cosmetics Corporation, to Ernest Kuhlwein, Bureau of Hazardous Waste Engineering, State of New Jersey, Department of Environmental Protection, December 3, 1986.

4. Letter from Ernest J. Kuhlwein Jr., Acting Chief, Bureau of Hazardous Waste Engineering, State of New Jersey, Department of Environmental Protection, to Mr. Sam Ghusson, Calvin Klein Cosmetics Corporation, February 6, 1987.

5. Letter from Keith A. Dempsey, Production Manager, Calvin Klein Cosmetics Corporation, to Ernest J. Kuhlwein, Bureau of Hazardous Waste Engineering, State of New Jersey, Department of Environmental Protection, February 19, 1987.

6. Letter from Keith A. Dempsey, Production Manager, Calvin Klein Cosmetics Corporation, to Ernest J. Kuhlwein, State of New Jersey, Department of Environmental Protection, Bureau of Hazardous Waste Engineering, March 11, 1987.

7. Letter from Frank Coolick, Assistant Director, Hazardous Waste Regulation, State of New Jersey Department of Environmental Protection, to Mr. Sam Ghusson, Calvin Klein Cosmetics Corporation, May 19, 1987.

8. Letter from Ernest J. Kuhlwein Jr., Chief, Bureau of Hazardous Waste Engineering, State of New Jersey, Department of Environmental Protection, to Mr. Sam Ghusson, Calvin Klein Cosmetics Corporation, March 4, 1988.

9. Letter from Kevin Whelan, Engineering Manager, Calvin Klein Cosmetics Corporation, to Sunila Agrawal, Division of Hazardous Waste Management, State of New Jersey, Department of Environmental Protection, April 28, 1988.

10. The Buried Valley Aquifer Systems: Resources and Contamination, Passaic River Coalition, 1986.

11. Federal Register, Vol. 53, No. 121, pp. 23685, 23686 and 23687, Sole Source Aquifer Determination for Fifteen Basin Aquifer Systems of New Jersey et al., June 23, 1988.

12. Uncontrolled hazardous waste site ranking system, A user's manual, 40 CFR, Part 300, Appendix A, 1986.

13. Selected Information of Wells from the Groundwater Site Inventory Data Base for Morris County, U.S. Geological Survey, Trenton, New Jersey, January 13, 1986.

14. Three-Mile Vicinity Map, based on U.S. Department of the Interior, U.S. Geological Survey Topographic Maps, 7.5 Minute Series: "Morristown Quadrangle, New Jersey", 1954, photorevised 1981; "Boonton Quadrangle, New Jersey", 1954, photorevised 1981.

15. Preliminary Assessment Off-Site Reconnaissance Information Reporting Form, Calvin Klein Cosmetics Corp., TDD No. 02-8903-07, NUS Corporation Region 2 FIT, Edison, New Jersey, April 4, 1989.

REFERENCES (CONT'D)

16. Telecon Note: Conversation between Mrs. Filippone, Passaic River Coalition, and Edmund Knyfd, Jr., NUS Corp., March 20, 1989.

17. Atlantic Coast Ecological Inventory, Newark, N.J.-N.Y.-PA., 1980.

18. Water Supply Overlay and Topographic Series, Sheets 25, State of New Jersey, Department of Environmental Protection, 1976.

19. Telecon Note: Conversation between Raymond Zabihach, Morris County Open Space Commission, and Susan Anderson, NUS Corp., March 28, 1989.

20. General Sciences Corporation, Graphical Exposure Modeling System (GEMS), Landover, Maryland, 1986.

21. State of New Jersey Department of Environmental Protection, Division of Water Resources, Surface Water Quality Standards, N.J.A.C. 7:9-4, Index D - Surface Water Classifications of the Passaic, Hackensack and N.Y. Harbor Complex Basin, July 1985.

22. New Jersey Department of Environmental Protection, Division of Water Resources, Surface Water Quality Standards, N.J.A.C. 7:9-4. 1 et. seq., May 1985.

REFERENCE NO. 1

Form ADM-012

RC - file

MEMO

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

TO File DATE 24 APR 1986

FROM Richard Cestone RC

SUBJECT Site Visit to Calvin Klein Corporation
Parsippany, Morris County
EPA ID NO. NJD 048 806 616

On Monday, April 21, 1986, a site visit and discussion took place at the above location. The following people were present:

Sam Ghusson	Calvin Klein	(201) 263-1655
Keith A. Dempsey	Calvin Klein	(201) 263-1655
Rich Cestone	BHWE	
Scott Baker	BHWE	
Michael Pulaski	BHWE	

Background Information

On March 7, 1986, a Part B call-in letter was sent to Calvin Klein Corporation. The site has a 12,000 gallon hazardous waste underground storage tank, as well as hazardous waste stored in drums. All of the hazardous waste is flammable. The purpose of the site visit was to become familiar with the facility, and to discuss the plans for the Part B permit application.

The Meeting

1. The meeting members met in Mr. Ghusson's office, where the writer discussed the situation of the facility. Mr. Ghusson mentioned that instead of filing the Part B application, he is going to close the underground storage tank, and then have the hazardous waste stored in drums, manifested off-site within ninety days. His main goal is to have the facility delisted from Treatment, Storage and Disposal status.

2. Mr. Ghusson mentioned that the hazardous waste generated is flammable. It is drained cologne from broken bottles and the flammable constituent is isopropyl alcohol.

3. The writer discussed the closure plan procedure, including the closure plan, the DWM approval, and the closure procedure itself. Mr. Ghusson mentioned that he hired AETC Corporation as the consultant for the closure, and even had a copy of the closure cost estimate which he gave to Michael Pulaski.

4. The meeting members toured the facility. The main operation is the filling of the cologne bottles in order to be marketed. The underground storage tank is beneath the parking area outside, and is made of stainless steel. There was only one drum partially full and it contained broken bottles of the cologne.

24 APR 1985

5. The facility, overall, was neat and cleaned. Because the tank is made of stainless steel and was installed in 1980, there should be no leak in the tank, thus there should be no problem with the closure.

EP5:lk

REFERENCE NO. 2

UNDERGROUND HAZARDOUS WASTE STORAGE TANK CLOSURE PLAN FOR CALVIN KLEIN COSMETICS CORP. 345 WALSH DRIVE PARSIPPANY, MORRIS COUNTY, NJ

JUNE 1986

Prepared by

STORCH ENGINEERS
220 RIDGEDALE AVENUE, FLORHAM PARK
NEW JERSEY 07932 (201) 822-2600

FLORHAM PARK NEW JERSEY
WETHERSFIELD CONNECTICUT
PROVIDENCE RHODE ISLAND
BOSTON MASSACHUSETTS
WESTBURY NEW YORK
NEW YORK CITY

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I. Requirements

Closure

The New Jersey Department of Environmental Protection requires, through regulations found at N.J.A.C. 7:26-1, that the owner or operator of a hazardous waste storage facility (Calvin Klein Cosmetics Corp) comply with certain closure requirements. Specifically, N.J.A.C. 7:26-9.8 states that the owner or operator close the facility in a manner that minimizes the need for further maintenance and controls, and minimizes or eliminates the post closure escape of hazardous waste to the ground water, surface water or atmosphere, so as to ultimately protect human health and the environment.

The owner or operator is required to have a written closure plan which includes: a description of when and how the facility will be closed (including sampling plan); an estimate of the maximum quantity of wastes in storage; decontamination procedures; and a schedule for final closure.

Groundwater Monitoring

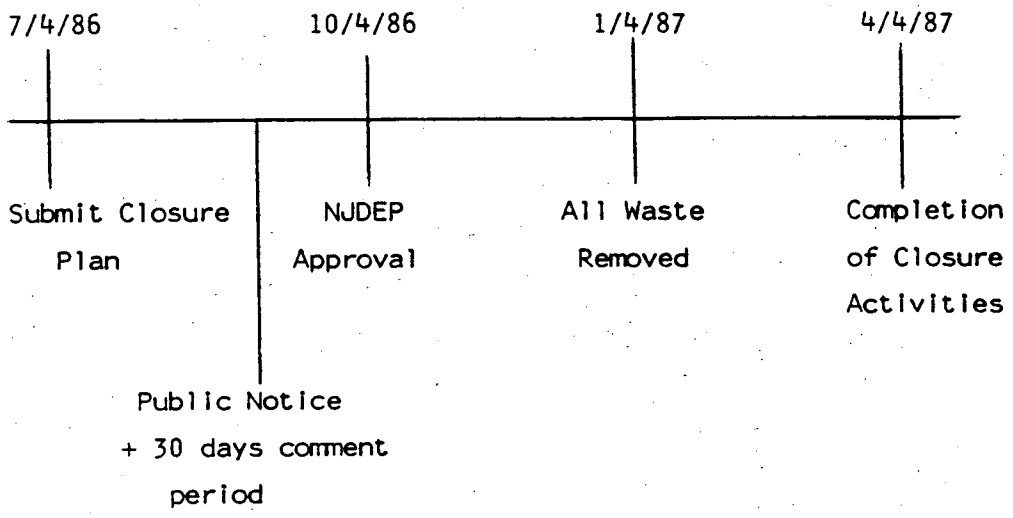
In addition, N.J.A.C. 7:26-9.2(b)3i requires that ground water monitoring be performed for underground hazardous waste storage tanks, in conformance with N.J.A.C. 7:14A-b.1 et seq. (the New Jersey Pollutant Discharge Elimination System regulations of the Division of Water Resources).

Timing

Calvin Klein Cosmetics Corp. is required to submit the closure plan to the NJDEP at least 180 days prior to the expected closure date. Within 90 days of the submitted date, the NJDEP will approve, modify, or disapprove the plan. Calvin Klein Cosmetics Corp. shall remove all waste from the site within 90 days of

approval of the cleanup plan. All closure activities shall be completed within 180 days after receiving the final volume of hazardous waste, or 180 days after approval of the closure plan, whichever is later.

Time Line



II. Introduction

Calvin Klein Cosmetics Corporation operates a 12,000 gallon underground hazardous waste storage tank under existing facility status. On March 7, 1986 the NJDEP called in Part B of the Hazardous Waste Permit application. On April 21, 1986 a meeting was held at Calvin Klein Cosmetics Corp. with staff members of the NJDEP, Bureau of Hazardous Waste Engineering, at which time the DEP was informed that the tank will be closed, that further hazardous waste drum storage will not exceed 90 days, and the Part B permit application will not be submitted.

In a letter dated June 4, 1986 the NJDEP directed Calvin Klein Cosmetics Corp. to submit a closure plan for the underground storage tank. This plan addresses the requirements for proper closure of the facility.

In summary, this plan outlines the closure procedures. The tank will be emptied, excavated, degassed, decontaminated and disposed of. Samples of the soil in the excavation pit will be analyzed for the following parameters:

- Priority pollutant volatile organic substances, plus 15 peaks
- Aromatic solvents
- Tertiary butyl alcohol
- Methanol

A composite waste pile soil sample will be analyzed for the following parameters:

- Volatile organics
- Petroleum hydrocarbons

- EP Toxicity
- Ignitability
- PCB's
- Reactivity (Cyanide and Sulfide)

The pipelines that are presently directed to the tank will be flushed clean, and will be sealed.

III. Facility Information

Name: Calvin Klein Cosmetics Corporation
345 Walsh Drive
Parsippany, N.J. 07054

(201) 263-1655

Contact: Mr. Sam Ghusson, Vice President Operations

Re: EPA ID Number: NJD 048 806 616 - Closure of Underground Hazardous Waste Storage Tank

IV. Site History

Date Calvin Klein Cosmetics Corp. began operations: April 1, 1984

Date of building construction: January 1981

Specifications of underground hazardous waste storage tank:

Capacity	12,000 gallons
Weight	31,000 pounds (approx.)
Dimensions	43 feet x 7 feet (approx.)
Year Built	1963
Manufacturer	Buffalo Tank Division Bethlehem Steel Company Dunellen, N.J.
Pressure	250 PSI
Maximum Temperature	110° Farenheit
Joint Eff.	85%
Material	A-212-B Flange
Seams	Butt Weld In & Out
Stamp	ASME Sect. VIII
Exterior	One (1) Shop Coat of Red Oxide Paint
Interior	Class III Sandblasted
Saddles	Two (Distance between saddles 36 ft)

Date commenced waste storage: January, 1981
Facility size: 84,100 square feet

Facility Description:

Calvin Klein Cosmetics Corp. occupies a single story building, the area of which is 84,100 square feet. Calvin Klein Cosmetics

primary business is the manufacturing and packaging of perfumes. During these operations; both hazardous and non-hazardous wastes are generated.

Hazardous materials (raw materials) used for on-site manufacturing, such as alcohol, are stored in drums in a "Compounding and Laboratory Area" at the northeast corner of the building (See Figure 2 - General Plan). These materials are drawn through pipes into various areas of the building where production, or packaging, via filling lines and machines, takes place. The finished product (bottled perfume) is temporarily stored in the warehouse portion of the building until shipped to market. A four-bay loading/unloading dock is located on the east side of the building.

At varying frequencies, the filling lines and packaging equipment are cleaned by flushing with water, or at extremely rare intervals with alcohol or alcohol based liquids. This liquid flush purges the lines and equipment of residuals from previous operations, and is allowed to drain through a 4-inch diameter line to a 12,000 gallon underground storage tank (completely buried) located immediately outside the northeast corner of the building. Additional material directed to this tank includes floor washing liquids from the production area, spilled product from this part of the building, as well as product which fails quality assurance inspections. These liquids accumulate in the storage tank until it is necessary to contact a transporter of hazardous waste to come to the site for removal/disposal services. The contents of the buried storage tank are vacuumed out into the transporter's tank trailer.

Wastes generated on site:

- Ethyl alcohol
- Perfume (28% oil, 72% ethyl alcohol)
- Body Lotion
- Water

V. Description of Closure Activities

The 12,000 gallon underground storage tank is the only method of hazardous waste storage used by Calvin Klein Cosmetics Corporation at their facility in Parsippany, N.J. There has been no storage of hazardous waste in drums, as originally stated in the Part A permit application. There has been, however, storage of hazardous product inside the building in the manufacturing area. This practice will continue, as will the short-term (90 days) drum storage of hazardous waste.

The underground tank hazardous waste facility will be closed in a manner that will eliminate the need for further maintenance. This will be accomplished by the decontamination of the pipelines and tank, and excavation and disposal of the tank. This work will be accomplished as soon as practicable after receipt of the NJDEP approval of this closure plan.

Ground water monitoring is not proposed at the present time. Ed Szkova, of the NJDEP, Bureau of Ground Water Quality Management confirmed that the NJPDES rules do not presently require ground water monitoring of underground tanks. Wells would only be necessary if the underground tank has leaked and there is a threat to the ground water resources.

Tasks

1. Floor drains and pipes will be flushed with detergent and hot water, and rinsed with clean water. Tank shut-off valves will then be closed, and drains will be sealed to prevent further disposal through floor drains.

2. Evacuation and disposal of tank contents. The tank contents will be transported by a licensed hazardous waste transporter and disposed of in accordance with applicable regulations.

3. The tank removal will be completed as per guidelines published by the American Petroleum Institute, API Bulletin 1604 (March 1981), "Recommended Practice for Abandonment or Removal of Used Underground Service Station Tanks." The guidelines are included below. Regarding tank ventilation, Section 3.1.6.3 will be utilized, with the exhaust gas monitored with a Century OVA - organic vapor analyzer.

4. Tank cleaning using detergent/hot water wash; Rinse 2 times with clean water. Cleaning and rinse water will be transported and disposed of as a hazardous liquid. Expected amount of wash water is 1,200 gallons (10% of 12,000 gallons).

5. Disposal of clean tank at a scrap metal dealer.

6. Obtain soil samples for laboratory analysis.

VIII. Sampling Plan

A. HEALTH AND SAFETY PLAN

Sampling activities at the Calvin Klein facility will follow Storch Engineers Standard Operating Procedures (SOP) and Standard Health and Safety Plan (HASP).

Storch Engineers is presently under contract to the NJDEP to provide field sampling assistant (contract X-082) and our SOP and HASP have been approved by, and are on file with the NJDEP.

It is anticipated that Level "D" personal protection will be the maximum level of protection needed during sampling activities. Level "D" will be the minimum level of protection used during sampling activities. Levels "C" and "B" personal protection will be available during on-site work. During sampling activities the ambient air will be continuously monitored with a Century OVA. If OVA readings on other conditions indicate a need for an upgrade of the level of personal protection, field personnel will be directed by the designated Site Safety Officer to upgrade their protective gear.

B. SCHEDULE AND REPORTING

This sampling program will be initiated shortly after NJDEP approval of the proposed plan. The present laboratory turnaround time is generally four to six weeks. Reports of activities and analytical results will be submitted shortly thereafter.

C. QUALITY ASSURANCE AND QUALITY CONTROL

I. Sampling Procedures

Sampling procedures will follow approved techniques appropriate for the type of facility and waste. Cross-contamination must be avoided; therefore, sampling equipment will be either used only once, or thoroughly cleaned using the following procedures:

Samplers and sample containers will be cleaned and prepared for field use according to the following procedures:

(1) Non-phosphate detergent wash;
(2) Tap water rinse;
(3) 10% nitric acid rinse*
    * only if sample is to be analyzed for metals
(4) Distilled/deionized water rinse
(5) Acetone (pesticide grade) rinse;
(6) Total air dry or nitrogen blow out. Acetone must be allowed to evaporate totally;
(7) Distilled/deionized water rinse.

A. Sample Collection

a. Volatiles

1. Soil

Soil samples for the volatile fraction will be collected from a minimum depth of 18"-24" below grade using a hand auger or other appropriate sampling device. The clean auger is advanced to a depth of approximately 16"-18" below grade. The sample is then collected using either a clean hand trowel or by decontaminating the hand auger and using a sampling attachment. The soil is collected

and placed directly into clean, labeled, laboratory provided 40 ml sample vials.

Soil samples taken from borings will be obtained using the following procedure. Borings are installed using a truck mounted drill rig and samples are taken using a standard split barrel sampler. Samples are discrete, from 6" increments. See Section D below for detailed information regarding subsurface soil sampling.

B. Specific Procedures for Sampling Soils

a. Prior to sampling, surface vegetation, rocks, leaves and debris will be cleared from the sample point to allow collection of a clean soil sample.

b. Efforts will be made to ensure that samples are representative of the areas being investigated. A large area may require the collecting and compositing of multiple samples into a single sample to represent the area. This does not preclude the collection and analysis of the individual samples to describe the sampling points within the area.

c. Soil or sediment samples are collected in wide mouth glass jars equipped with teflon-lined screw caps. Samples are preserved by cooling with ice or refrigeration at 4°C. Bottles are cleaned with detergent, rinsed with tap water and organic free water.

d. Sample containers will be marked to indicate sample number, date, job number and samplers initials.

C. Specific Procedures for Sampling Subsurface Soil Sample

Subsurface soil samples obtained from exploratory borings using driven split barrel type samplers or thin wall tube type

samplers will be obtained in accordance with American Society for Testing and Materials Standards to the degree permitted by subsurface conditions.

The procedures to be used for obtaining subsurface soil samples are:

a. Clear the borehole to the desired sampling elevation using equipment and drilling methods that will ensure that the material to be sampled is not disturbed by the operation. In the case of hollow stem auger borings the augers will be advanced to the desired sampling depth and the stem cleared of any soil material. In the case of rotary wash drilling methods only clean water wash will be permitted using side discharge drill bits.

b. In the case of driven split barrel sampling, the sampler will be inserted into the borehole until resting on the bottom. The sampler will then be driven with a 140 lb. hammer falling freely for a distance of 30 inches until either 24 inches of soil have been penetrated or 100 blows have been applied. The number of hammer blows required to advance the split barrel sampler each 6 inch interval will be recorded.

c. The above described sampling procedures will be repeated in boreholes at intervals as determined in the specific task description.

d. In the case of driven split barrel sampling, the sampler will be brought to the surface, the sample condition recorded and the sample placed in either moisture tight glass jars if to be used for engineering property assessment of soils or in laboratory prepared air tight containers if to be used for chemical testing.

In the case of thin walled tube samplers the soil will be retained in the sampling tube and the tube sealed in the field using microcrystalline wax, non-absorbent packing and rubber end caps. These samples will be opened and extruded in a laboratory.

e. Soil samples for the volatile fraction will be collected from a minimum depth of 18"-24" below grade. The soil is collected and placed directly into clean, labeled, laboratory provided 40 ml sample vials.

f. Concurrent with subsurface sampling operations, the field personnel will maintain an accurate log of borings including the following information as a minimum:

1) Name and location of job
2) Date of boring - start, finish
3) Boring number and coordinate, if available
4) Surface elevation, if available
5) Sample number and depth
6) Method of advancing sampler, penetration and recover lengths
7) Type and size of sampler
8) Description of soil sample
9) Thickness of layer
10) Depth to water surface; to loss of water; to artesian head; time at which reading was made
11) Type and make of machine
12) Size of casing, depth of cased hole
13) Names of crewmen
14) Weather, remarks

D. Equipment Decontamination

Sampling equipment and sample containers must be scrupulously cleaned before each use. This is particularly important in

situations where litigation is being considered or if the analysis to be performed on the samples is expected to contain low-level (low ppm range) concentrations of hazardous components.

Whenever possible, field sampling equipment should be laboratory cleaned, wrapped and dedicated to a particular sampling point. Bailers for monitor well sampling should always be cleaned and wrapped in the laboratory whereas soil equipment may be field cleaned if laboratory cleaning is not feasible.

Samplers and sample containers should be cleaned and prepared for field use according to the following procedures:

1. Non-phosphate detergent and tap water wash.
2. Tap water rinse.
3. 10% nitric acid rinse.*
   * only if sample is to be analyzed for metals.
4. Distilled/Deionized water rinse.
5. Acetone (Pesticide grade) rinse.
6. Total air dry or nitrogen blow out.*
   * Acetone is an acceptable cleaning solvent provided that it is allowed to totally evaporate via air drying or a nitrogen blowout and is followed by a distilled/deionized rinse.
7. Distilled/Deionized water rinse.

After this procedure has been accomplished, the sample container should be sealed and the sampling device wrapped in cleaned or autoclaved aluminum foil and custody sealed for identification. A record will be kept of the technician performing the procedure as well as the date and time. The cleaning of equipment initiates the chain of custody procedure for legal custody.

The sampling equipment should remain in its wrapping until ready to use. It should be stored in an area where no contamination will occur.

The chain of custody for sampling events should begin with the cleaning of the sampler. Wherever possible samplers should be numbered in a manner that will not affect their integrity, wrapped in a material (i.e. aluminum foil) that has either been autoclaved or cleaned in the same manner as the sampler.

Distilled water commonly used for water coolers and available in 5 gallon plastic carboys (i.e. electro-still) is acceptable for use in sampler decontamination but may not be utilized for field and trip blank water.

Field cleaning of well casing, well screening and drillary equipment should consist of a manual scrubbing to remove foreign material and steam cleaning inside and out until traces of oil and grease are removed.

E. Sample Preservation

1. To prevent or retard the degradation/modification of chemicals in samples during transit and storage, the samples will be preserved and stored as required by the laboratories.

2. Efforts to preserve the integrity of the samples will be initiated at the time of sampling and will continue until analyses are performed.

3. Those sample containing organic compounds will be preserved immediately by refrigeration at or below 4°C.

F. Laboratory

The laboratory to which the samples will be sent will have either been inspected by qualified personnel or the Quality Assurance Plan of the Laboratory will be reviewed for compliance with standard methodology. The laboratory will be certified in the state in which the project is being performed. Reviewed are types of equipment, methodology, ability to analyze in the required time frame of project demands and legal holding time for samples. Detection limits will be specified per the types of results required. The laboratory to be used for this project is the ERCO division of the ENSECO Group, in Cambridge, Massachusetts for the analyses. The ERCO laboratory quality assurance plan is included as an attachment to this submission.

G. Methods

The following methods will be used for determing the concentration of organics in samples:

(1) USEPA Method 624 (GC/MS) plus the identification of 15 extra peaks will be used for volatile organic analysis.
(2) USEPA Method 418.1 (Infrared) for petroleum hydrocarbons.
(3) USEPA Method 8020 for determining aromatic solvents in soil.
(4) "Test Methods for the Evaluation of Solid Waste - Physical Chemical Methods," SW 846, Second Edition, 1982, for determination of EP Toxicity and ignitability.

SITE SPECIFIC SAMPLING AND QUALITY ASSURANCE PLAN

A site specific Quality Assurance Plan will incorporate the general Quality Assurance procedures and at a minimum include:

QA Plan

Project #, site ID
Discipline of assignment
Technical approach
Task breakdown of assignment
Project manager identification
Project personnel requirements
Personnel assignments
Schedule for activities
Background data
Special training requirements
Documents to be generated
QC requirements

A. Project #S.E. 1716, Site I.D.: Calvin Klein Cosmetics Corporation, Parsippany, Morris County, New Jersey.

B. Discipline of Assignment: Plan for closure of underground storage tank and sampling in accordance with directives of the Bureau of Hazardous Waste Engineering.

C. Technical Approach:

Geology of the Area

Parent Formation

The soils of this site are glacial moraine which are usually composed of unstratified materials deposited at the outer edge

of the ice sheet during the Wisconsin stage of continental glaciation. Glacial moraine consists of unassorted and heterogenious mixture of material, ranging in size from clay to boulders. Near the Morristown Municipal Airport, the greater part of the terminal moraine consists of clayey silt and silt, with a minor amount of cobbles and boulders imbedded in this matrix. The northern part of the terminal moraine is composed of rocks and soils derived from gneiss, limestone, quartzite, schist, conglomerate and gray shale and sandstone. The southeastern segment contains, in addition, much soft, red Triassic shale and sandstone. Lenses and pockets of silt and sand occur throughout the heavier-textured zones. Some local stratification is found, usually abutting the forward face of the moraine. Soil colors range from yellow brown to red brown.

The terminal moraine may easily average 100 feet in thickness over much of its length in Morris County. The underlying formations include gneiss, limestone, quartzite, conglomerate and red shale and sandstone.

Land Form

Terminal moraine in the north, westward from Dover, is typically hummocky, whereas the eastern segment assumes a more regularly elevated land form. In the hummocky part there are small poorly drained depressions too small to delineate individually.

Soils and Drainage

The soil type consists of silts, sandy silt, sandy gravel and gravelly sand. Bedrock is usually found at depths greater than 50 feet. Significant soil development has been retarded because of the fairly open textures and recent deposition. The relatively high areas, fairly steep slopes and usual open

textures provide good to excellent surface and internal drainage. The gound water table is low and capillarity at a minimum, except in depressions making the drainage conditions good to excellent.

Soil Sampling

This sampling program will consist of soil sampling from the excavation pit, and the waste soil pile to assess if the tank has leaked.

Soil samples will be obtained from eleven (11) locations in the excavation pit. Samples S1 through S5 will be obtained from the base of the pit. S6 through S9 will be obtained from the sidewalls (2 each wall), approximately 2 feet from the base of the pit. S11 and S12 will be obtained from the end walls, approximately 2 feet from the base of the pit. One composite soil sample (WP1) will be obtained from the soil waste pile. The parameters analyzed for are detailed in the following Sampling Plan Summary.

Sampling Plan Summary

Soil Sample Identification	Depth	Parameter VOA	15 Peaks	Aromatic Solvents	Alcohols	PHC	EP Tox	Reactivity Flashpoint
S-1 through S-11	0-6"	x	x	x	x			
WP1	18-24"	x				x	x	x
Lab Blank		x	x	x	x			
Field Blank		x	x	x	x			
Analytical Method		a.	b.	c.	d.	e.	f.	f.

a. EPA Method 624 (GC/MS)
b. Foreward library search
c. USEPA Method 8020 for determining aromatic solvents in soils
d. Gas Chromatograph/Flame ionization detector
e. EPA Method 418.1 (Infrared)
f. EPA - SW846 - "Test Methods for the Evaluation of Solid Waste - Physical/Chemical Methods," 2nd Ed., 1982

1. 0-6" samples will be taken from inside the pit excavation
2. Alcohols: Methyl-butyl-tertiary-ether, and methanol

D. The breakdown of assignment:

Storch Engineers will be responsible for performing the soil sampling. The laboratory chosen for this project is the ERCO division of ENSECO Group, located in Cambridge, Massachusetts. The excavation contractor is Advanced Environmental Technology Corporation.

E. Project Manager Assignment:

Storch Engineers have been retained by Calvin Klein Cosmetics Corp. to provide environmental services for this project. Mr. Gregory A. Pikul is the Project Manager for Storch Engineers.

F. Project Personnel Requirements and Assignments

Sampling personnel have not been assigned to this project at the present time, however, the sampling team will be experienced and capable of performing the sampling in the manner prescribed herein. Storch Engineers will observe the activities on site, and are fully qualified in the health and safety aspects of a sampling and tank excavation program. Level D protection will be required.

G. Special Training Requirements

Personnel assigned to the site will be trained in the health and safety requirements for sampling and excavation work. Level D protection will be required.

H. Documents to be Generated

- Sample trip report/sample analysis report
- Sample analytical report
- QA/QC data
- Chain of Custody forms

REFERENCE NO. 3

Calvin Klein

December 3, 1986 CERTIFIED P 343 440 416

Mr. Ernest Kuhlwein
Bureau of Hazardous Waste Engineering
New Jersey Department of Environmental Protection
Division of Waste Management
CN-028
Trenton, New Jersey 08625

Dear Mr. Kuhlwein:

We reference the Underground Hazardous Waste Closure Plan submitted to your bureau in June 1986 that the plan was submitted in accordance with your letter dated June 4, 1986, that provided for specific closure provisions. Calvin Klein Cosemtics Corporation will be moving to larger facilities in June 1987 at which time the lease on this property will expire. We are presently preparing submittals to the New Jersey Department of Environmental Protection in conformance with ECRA regulations. It is our understanding that we need your formal approval prior to moving the underground hazardous waste storage tank.

We look forward to your early response.

Sincerely,

CALVIN KLEIN COSMETICS CORPORATION

Keith A. Dempsey
Production Manager

KAD:rb

REFERENCE NO. 4

Let's protect our earth

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF HAZARDOUS WASTE MANAGEMENT

John J. Trela, Ph.D., Acting Director
401 East State St.
CN 028
Trenton, N.J. 08625
609 - 633 - 1408

Mr. Sam Ghusson
Calvin Klein Cosmetics Corporation
345 Walsh Drive
Parsippany, N.J. 07054

- 6 FEB 1987

Dear Mr. Ghusson:

RE: Tank Storage Closure Plan and Delisting Request to Generator Only Status, Calvin Klein Cosmetics Corporation, Parsippany, Morris County, EPA ID No. NJD 048 806 616

The Bureau of Hazardous Waste Engineering (the Bureau) acknowledges receipt of a letter, signed by Mr. Keith A. Dempsey, dated December 3, 1986, concerning closure of an underground hazardous waste storage tank at the referenced site. Calvin Klein has been listed as a Treatment, Storage or Disposal (TSD) facility because the company originally filed a Part A permit application with the USEPA for the following hazardous waste activities:

a) Hazardous Waste Storage in containers (S01) activity at 1414 gallons; and

b) 12000 gallon underground hazardous waste storage tank (S02) activity

Calvin Klein has already submitted a closure plan to the Department for the S02 activity in June 1986; and it is this Bureau's understanding based on a meeting held at the facility on April 21, 1986, that Calvin Klein wishes to relinquish its TSD status and become a generator only by manifesting its drums of hazardous waste off site within 90 days of accumulation in addition to closure of the underground tank.

In order to comply with EPA delisting policy, if Calvin Klein wishes to be delisted from TSD status it will be necessary for the company to submit a revised closure plan to include closure of hazardous waste storage in containers activity (S01) in accordance to N.J.A.C. 7:26-9.8 in addition to the S02 closure. This is necessary for delisting to generator only status, even though you intend to continue to accumulate hazardous waste in the containers albeit for less than ninety (90) days.

After closure is completed, in order to be considered a generator only of hazardous waste regarding drum storage activity, Calvin Klein Corporation must demonstrate compliance with the requirements of N.J.A.C. 7:26-9.3(a) as follows:

- 6 FEB 1987

1. All such waste is, within 90 days or s, shipped off-site to an authorized facility or placed in an site authorized facility, as defined in N.J.A.C. 7:26-1.4.

2. The waste is placed in containers which meet the standards of N.J.A.C. 7:26-7.2 and are managed in accordance with N.J.A.C. 7:26-9.4(d).

3. The date upon which each period of accumulation begins is clearly marked and visible for inspection on each container.

4. The generator complies with the requirements for owners and operators of N.J.A.C. 7:26-9.6 and 9.7 concerning preparedness and prevention, contingency plans and emergency procedures as well as N.J.A.C. 7:26-9.4(g) concerning personnel training.

The company has previously submitted a contingency plan under N.J.A.C. 7:26-9.7, however you must also prepare for submission and review a Preparedness and Prevention Program under N.J.A.C. 7:26-9.6 and a personnel training program as per N.J.A.C. 7:26-9.4(g).

Additionally, the Bureau has reviewed your closure plan of your 12,000 gallon underground hazardous waste storage tank as well as the contingency plan for your facility and has found the plans deficient.. The following additional information is required.

1. In the introduction of the closure plan you should indicate the rationale for selection of the sample parameters indicated on page 3.

2. In the section titled "schedule for closure activities", the excavated soil from the removal of the underground tank should be placed on polyethylene sheeting and the material should be covered and secured.

3. In the quality assurance and quality control section of the sampling plan the following is required:

   a) All sample collection equipment must be stainless steel.

   b) All samples must be discrete; no compositing is allowed.

   c) Sample collection equipment decontamination water must be distilled/deionized water. Regular distilled water is not acceptable.

   d) One duplicate sample should be collected for this sample episode.

   e) One background sample should be collected and analyzed for the same parameters as the samples.

   f) All samples from the surrounding soil (S1-S11) and the waste pile (WP-1) should be taken at 18"-24" from the

- 6 FEB 1987

exposed surface, not at 0"-6" as stated in the summary on page 24.

4. Advance notification must be given of the date the tank is to be removed so that Department personnel can plan to be present for site inspection at that time, to note evidence of any previous spills.

5. More detailed specifications on the drain sealing must be supplied. Also the waste disposal method after the drains were sealed was not addressed. Please note this.

6. Information on the depth to groundwater is important in determining if ground water monitoring is necessary. Please submit this information as well as a topographic map of the site.

   Since the hazardous waste storage containers (S01) are stored indoors and on a concrete base, no soil sampling and analysis is required for this area.

Calvin Klein Corporation is hereby requested to respond to this office within thirty (30) days from the date of this letter, by submitting revised closure plans that includes both S01 and S02 activities and all other information requested in this letter. If you have any questions please call Sunila Agrawal of this Bureau at (609) 633-0723.

Very truly yours,

Ernest J. Kuhlwein, Jr., Acting Chief
Bureau of Hazardous Waste Engineering

EP61/sg
c: Lori Amato, USEPA
John Mateo, DHSM-BEMQA
Robert Berg, DWR-BGWQM

REFERENCE NO. 5

Calvin Klein

February 19, 1987

N.J. Dept. of Environmental Protection
Bureau of Hazardous Waste Engineering
CN028
Trenton, NJ 08625

Attn: Ernest J. Kuhlwein

Re: Tank Storage Closure Plan
EPA ID No. NJD 048806616

Dear Mr. Kuhlwein:

This letter is in response to your letter dated February 6, 1987 wherein you requested additional information regarding the closure of the tank and drum storage areas at this facility. The Department has requested additional information regarding the closure activities and delisting to generator only status, to be submitted as part of a revised closure plan. As the information requested in your letter regarding closure is not significant in quantity, we are submitting the requested information as an addendum in a format that follows the outline of your letter.

Please note that Calvin Klein Cosmetics Corporation will be moving out of this facility in June 1987 and is presently undergoing the required ECRA activities for closure. The type of waste stored in the drums (S01) is presently limited to bottles of perfume that have been returned from retail outlets. The returns are the result of damaged packaging (boxes) and faulty sprayers. The average quantity generated is one drum per month. The additional liquid waste that will be stored in drums subsequent to the tank closure amounts to less than 25 gallons per month. The waste consists of alcohols that are used to rinse perfume bottle filling lines between batches. As the quantity of wastes to be stored will be very minimal, the preparation of Preparedness and Prevention, and Personnel Training Plans would be inappropriate at this time.

Subsequent to the underground tank closure, all waste generated will be stored in drums meeting the standards of NJAC 7:26-7.2 and clearly marked showing contents and first date of storage.

Regarding the closure of the 12,000 gallon underground hazardous waste storage tank (S02), the following information is offered to satisfy your comments.

1. The post-excavation sample analytical parameters chosen include volatile organics + 15 peaks, aromatic solvents and alcohols. The rationale for the selection of these parameters is that the tank has only been used for the storage of alcohol from flushing the perfume bottle filling lines, and off-spec alcohol based perfumes.

Calvin Klein Cosmetics Corporation
. 345 Walsh Drive, Parsippany, New Jersey, [illegible]

2. The excavated soil from the removal of the underground tank will be placed on polyethylene sheeting, and the material will be covered and secured, until analytical results are received and appropriate approval is granted for the replacement or disposal of the soil.

3. Regarding quality assurance and quality control:

   a. Soil sample collection equipment will be stainless steel.
   b. Soil samples will be discrete.
   c. Distilled/deionized water will be used for sample collection equipment decontamination.
   d. One duplicate sample will be obtained for this sampling episode and analyzed for volatile organics + 15 peaks, aromatic solvents, and alcohols.
   e. One background sample will be obtained and analyzed for the same parameters as in (d) above.
   f. The post-excavation soil (S1-S11) and the waste pile (WP-1) samples will be obtained from the 18"-24" increment beneath the exposed surface.

4. It is our intention to remove the underground tank in March 1987. Please note that the original closure plan was submitted to the NJDEP in June 1986, and Calvin Klein Cosmetics Corporation will be moving out of this facility in June 1987. The precise excavation date will be set upon receipt of the closure approval. The NJDEP will be notified of the excavation date(s).

5. The facility drains that lead to the underground hazardous waste storage tank will be sealed with concrete after the lines are flushed. Subsequent to sealing the drains, the waste will be collected and stored in drums, for ultimate disposal at an authorized hazardous waste disposal facility.

6. The depth to ground water has been determined to be greater than 15 feet. This was determined on February 9, 1987 for a tank-tightness test. Attached is an area map taken from the USGS Morristown quadrangle which shows contours in the area. A topographic map of this property is not available and would cost several thousand dollars to prepare. As this is a straight forward tank excavation, a detailed contour map does not appear to be warranted.

Regarding the closure of the drum storage area, the following information is provided.

1. The site location map has been revised to show the specific location of the drum storage area.

2. The drums stored in this area contain only bottles of perfume that have been returned from retail outlets. They are damaged to the extent of broken caps and sprayers. These drums accumulate at an average rate of one drum per month and are removed for disposal by Advanced Environmental Technology Corporation of Flanders, NJ.

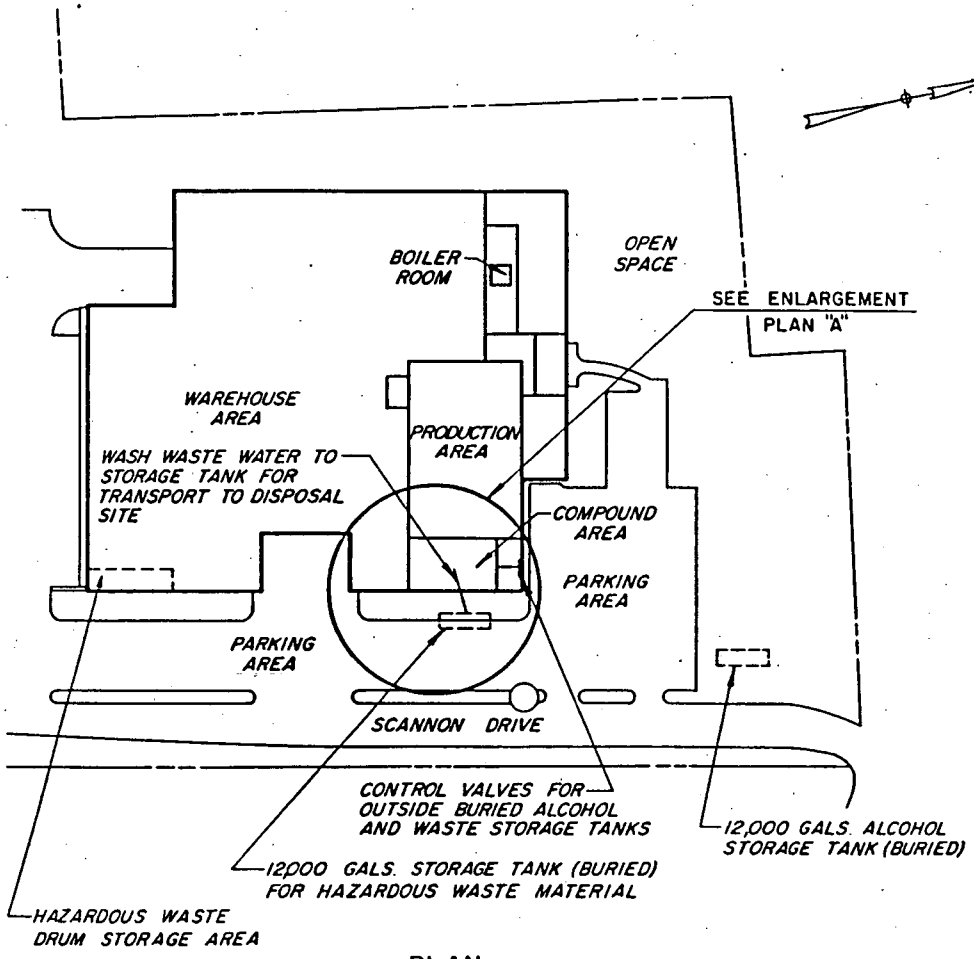
3. The closure of this area entails removal of the existing drums and sealing the floor drain with concrete (this drain leads to the 12000 gallon underground hazardous waste storage tank). There have been no spills in this area, and there is no need to clean this floor area.

As Calvin Klein Corporation must move out of this facility by June 1987, your expedient approval of our plan is requested.

Very truly yours,

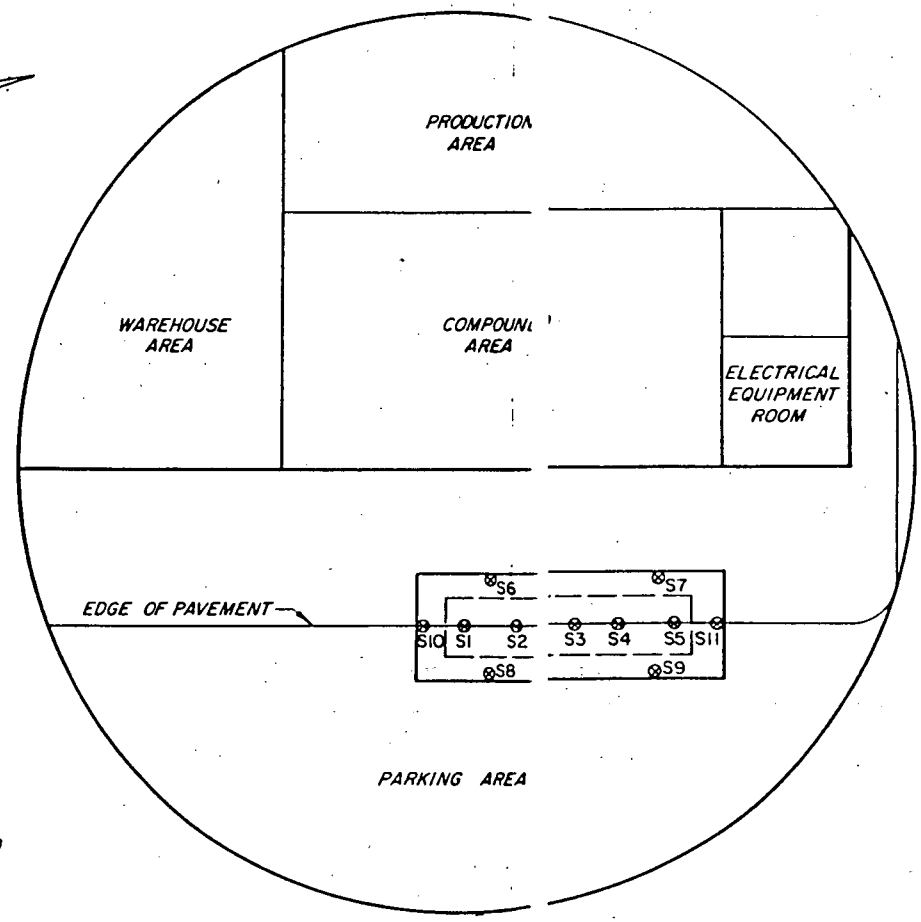
Keith A. Dempsey

KAD/bb/ENV20



PLAN

SCALE : 1"= 100'



PLAN "A"

SCALE : 1"= 20'

LEGEND

TANK LOCATION

EXCAVATION BOUNDARY

SOIL SAMPLE LOCATION

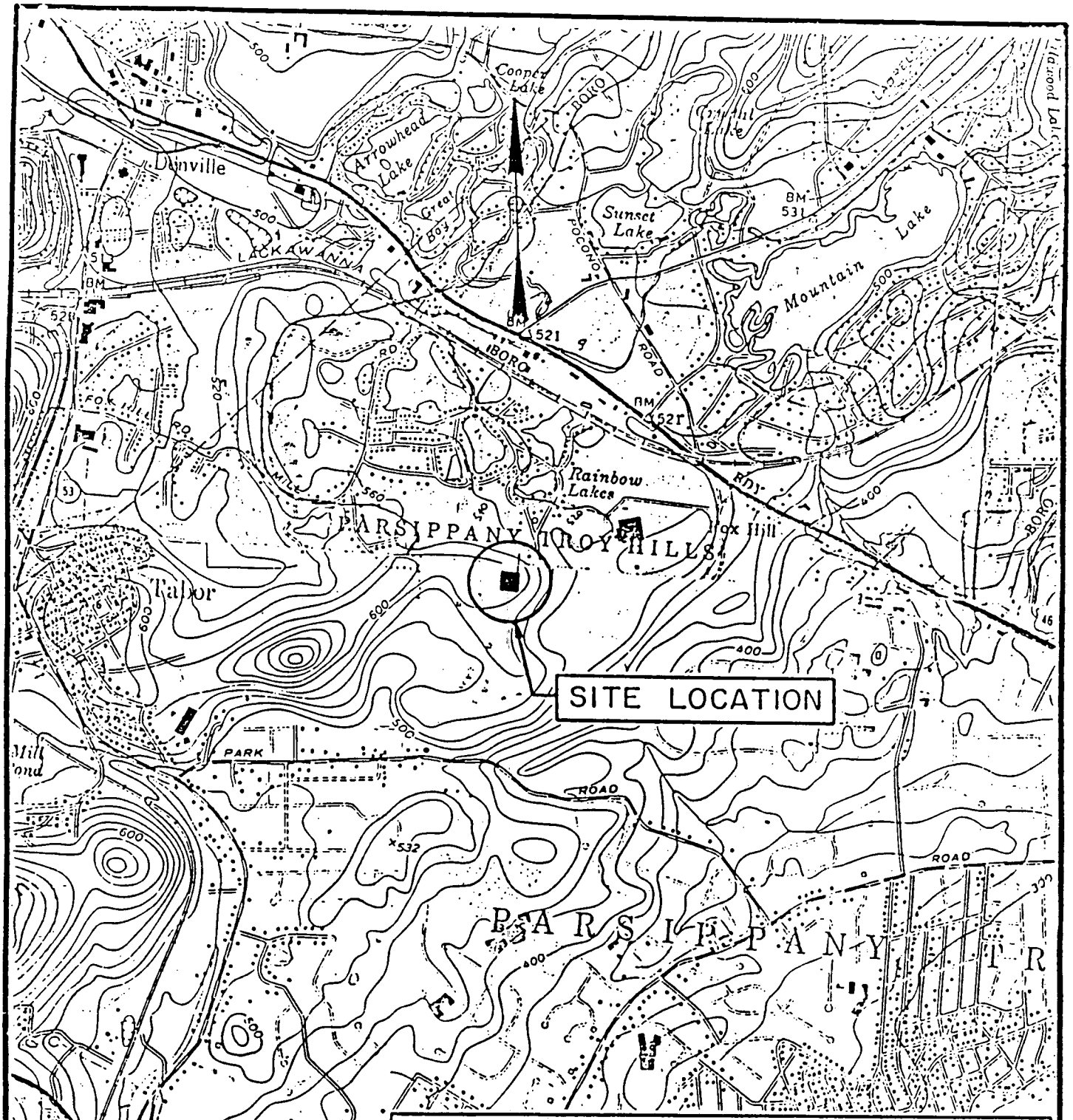
REVISED 2-19-87

CALVIN KLEIN COSMETICS CORP.
PARSIPPANY, MORRIS COUNTY, N.J.

SITE LOCATION MAP

STOF CH ENGINEERS
220 RIDGEDALE AVENUE
FLORHAM PARK, NEW JERSEY 07932

PROJECT NO. 1716
SCALE: AS SHOWN
DATE: 6-25-86
DRAWING NO. 1



NOTE: FROM USGS 7.5 MINUTE SERIES TOPOGRAPHIC MAP, MORRISTOWN QUADRANGLE N. J.

CALVIN KLEIN COSMETIC CORP.
PARSIPPANY, MORRIS COUNTY, N.J.

GENERAL LOCATION AND TOPOGRAPHICAL MAP

PROJECT NO. 1716

SCALE: 1" = 2000'

DATE: 2-19-87

DRAWING NO. 2

STORCH ENGINEERS
220 RIDGEDALE AVENUE
FLORHAM PARK, NEW JERSEY 07932

127430

REFERENCE NO. 6

Calvin Klein

March 11, 1987

New Jersey Department of Environmental Protection
Bureau of Hazardous Waste Engineer
CN028
Trenton, New Jersey 08625

Attention: Ernest J. Kuhlwein

Re: Tank Storage Closure Plan
EPA: ID No. 048806616

Dear Mr. Kuhlwein:

This letter is in response to a phone conversation dated March 11, 1987 regarding the storage area that stores the SO1 drums. If there is a spill or any sign of contamination, the surface area will be cleaned in the following manner.

1. All wastes will be squeeged and put into hazardous waste storage drums;
2. The surface will be washed and cleaned. All residue as a result of this cleaning will be treated as a hazardous waste and stored in hazardous waste storage drums. These drums will be removed by Advanced Environmental Technology Corporation within 90 days.

Very truly yours,

CALVIN KLEIN COSMETICS CORPORATION

Keith A. Dempsey
Production Manager

KAD:rb

REFERENCE NO. 7

Agrawal - FA

Let's protect our earth

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
John J. Trela, Ph.D., Acting Director
401 East State St.
CN 028
Trenton, N.J. 08625
609 - 633 - 1408

19 MAY 1987

Mr. Sam Ghusson
Calvin Klein Cosmetics Corporation
345 Walsh Drive
Parsippany, N.J. 070054

Dear Mr. Ghusson:

RE: Closure Plan for Hazardous Waste TSD Facility at Calvin Klein Cosmetics Corporation, Parsippany, N.J. Morris County, EPA ID No. NJD 048 806 616

The Bureau of Hazardous Waste Engineering (the Bureau) has received a closure plan for a 12,000 gallon underground hazardous waste storage tank (S02) activity and hazardous waste storage in containers (S01) activity on June 1986. Revisions were received on February 27, 1986 and March 11, 1987. A Public Notice was issued and a public comment period of thirty (30) days was provided for comments concerning the closure plan. However, no comments have been received from the public concerning closure.

Therefore, the Division of Hazardous Waste Management hereby approves the closure plan of Calvin Klein Corporation's 12,000 gallon waste storage tank and container storage area. Closure of the subject tank and container storage area shall be in accordance with N.J.A.C. 7:26-9.8, the submittals dated February 27, 1986, March 11, 1987 and also the following conditions:

1. You shall complete closure activities of the tank within 180 days after this date of approval of the closure plan.

2. The tank, all appurtenances, wastes from the tank and waste residues, shall be shipped, via manifests, to an authorized facility, within 90 days of the date of this letter.

3. All equipment used in the tank closure activity should be decontaminated and the resulting rinse shall be manifested to an authorized facility. All discarded unusable equipment shall also be manifested to an authorized facility.

4. The S01 drum storage area will be cleaned according to the letter dated March 11, 1987. All residues resulting from this cleaning operation will be treated as hazardous waste and removed off-site.

5. Soil around 12,000 gallon tank should be sampled and analyzed after the tank removal in accordance with the closure plan and letter dated February 19, 1987.

   If the analytical results show that the soil is contaminated, Calvin Klein should submit a clean up program within 60 days of obtaining the results to New Jersey Department of Environmental Protection.

6. Provide written certification by the owner or operator and an independent professional engineer who is registered in New Jersey that the procedures outlined above have been completed in accordance with the approved closure plan, within 210 days of the date of this letter.

7. The facility should notify the Bureau at least two (2) weeks prior to initiation of tank removal and/or soil sampling activities so that a representative from BHWE may be present. Notification should be sent to:

   Bureau of Hazardous Waste Management
   Division of Hazardous Waste Engineering
   401 E. State Street
   CN 028
   Trenton, N.J. 08625
   (609) 292-9880

8. The Bureau understands that Calvin Klein Cosmetics Corporation will be vacating the facility in June 1987. Please be advised that the facility will be responsible for the following:

   a) Full implementation of the tank and container storage area closure plan in accordance with N.J.A.C. 7:26-9.8.

   b) Notification of Department of Environmental Protection, Division of Waste Management, Bureau of Industrial Sites Evaluation, CN028, Trenton, NJ 08625, pertaining to the potential applicability of N.J.A.C. 7:13, regulations under the Environmental Clean-up Responsibility Act, P.L. 1983, C.330, N.J.S.A. 13:1K-6.

If you have any questions regarding this letter feel free to contact Sunila Agrawal of this Bureau at (609) 633-0723.

Very truly yours,

Frank Coolick, Assistant Director
Hazardous Waste Regulation

EP61/sg
Enc.
c: Lori Amato, USEPA, Region II
T.R. Kearns, Chief
Bureau of ECRA Applicability and Compliance

REFERENCE NO. 8

F-SA

Let's protect our earth

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF HAZARDOUS WASTE MANAGEMENT
John J. Trela, Ph.D., Director
401 East State St.
CN 028
Trenton, N.J. 08625
609 - 633 - 1408

MAR 04 1988

Mr. Sam Ghusson
Calvin Klein Cosmetics Corporation
345 Walsh Drive
Parsippany, N.J. 070054

Dear Mr. Ghusson:

RE: CLOSURE PLAN FOR HAZARDOUS WASTE TSD FACILITY AT CALVIN KLEIN COSMETICS CORPORATION, PARSIPPANY, N.J. MORRIS COUNTY, EPA ID No. NJD 048 806 616, CP-86-54

The New Jersey Department of Environmental Protection (Department) has received Soil Sampling and Analysis data prepared by Enseco-Erco Laboratory for Calvin Klein Cosmetics Corporation in connection with underground tank closure; and New Jersey Professional Engineer's certification of closure submitted by Storch Engineers for the 12000 gallon underground hazardous waste storage tank at the site.

A review of the data by the Environmental Measurements Section of the Bureau of Environmental Measurements and Quality Assurance notes that there is no contamination remaining in the closed area as evidenced by soil samples S-1 through S-13 and WP-1.

Nevertheless, in order for the entire facility to be delisted, Calvin Klein Cosmetics Corporation must also submit certification by a New Jersey licensed P.E. of closure for it's drum storage area (S01). Closure approval for this activity was approved by the Bureau of Hazardous Waste Engineering together with S02 Closure approval on May 19, 1987.

You should submit the required S01 closure certification to the Department within thirty days of date of this letter.

MAR 04 1983

If you have any questions regarding this matter, please contact Sunila Agrawal of my staff.

Very truly yours,

Ernest J. Kuhlwein, Jr., Chief
Bureau of Hazardous Waste Engineering

EP61/lr
cc: Barry Tornick, USEPA

DOCUMENT: CALVIN
FOLDER: LXRMCB

REFERENCE NO. 9

Calvin Klein

April 28,1988

Sunila Agrawal
Department of Enviornmental Protection
Division of Hazardous Waste Management
401 East State St.
CN 028
Trenton N. J 08625

Dear Sunila,

As per our conversation yesterday, I am submitting to our office a certification of closure for our drum storage area (S01) done by a New Jersey Licensed P.E. (Mr. Geoffrey R. Lanza).

Should have need of any further information contact me at (201) 633-7800.

Thanks for your help.

Sincerely,

Kevin Whelan
Engineering Manager

KW/lr

Fax: (201) 633-9660

STORCH | ENGINEERS

220 RIDGEDALE AVENUE, P.O. BOX 267
FLORHAM PARK, NEW JERSEY 07932
1-201-822-2600

PROFESSIONAL ENGINEER CERTIFICATION OF CLOSURE

I, Geoffrey R. Lanza, a Professional Engineer registered in the State of New Jersey, hereby certify that I have reviewed the Closure Plan, dated June 1986 and revised on February 19, 1987, for the 12,000 gallon underground hazardous waste tank and drum storage area (EPA# NJD 048 806 616) at Calvin Klein Cosmetics Corporation, located in Parsippany, NJ, that I am familiar with the rules and regulations of the New Jersey Department of Environmental Protection (NJDEP) pertaining to closure of such a facility, and that I personally have made a visual inspection of the aforementioned facility in addition to the visitations of Storch Engineers' staff, and that the closure at the aforementioned facility has been performed in compliance with the facility's closure plan approved in writing by the NJDEP on May 19, 1987.

Geoffrey R. Lanza
Signature

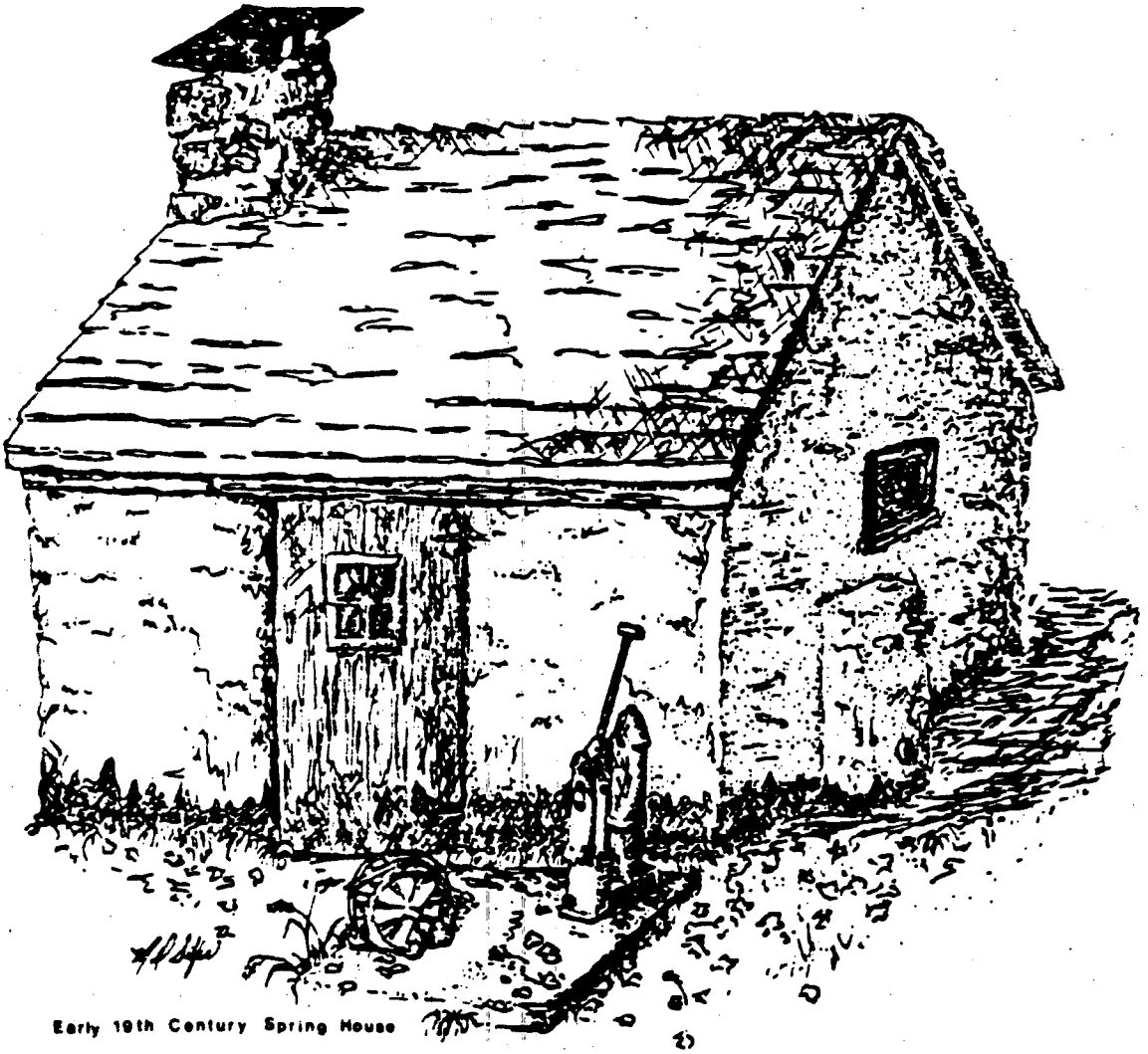
4/15/88
Date

GE 30680
(NJ Professional Engineer License Number)

Note: This certification supercedes that of 9/17/87.

REFERENCE NO. 10

THE BURIED VALLEY AQUIFER SYSTEMS: RESOURCES AND CONTAMINATION



Early 19th Century Spring House

PASSAIC RIVER COALITION

246 Madisonville Road

Basking Ridge, New Jersey 07920

(201) 766-7550

1986

CHAPTER I

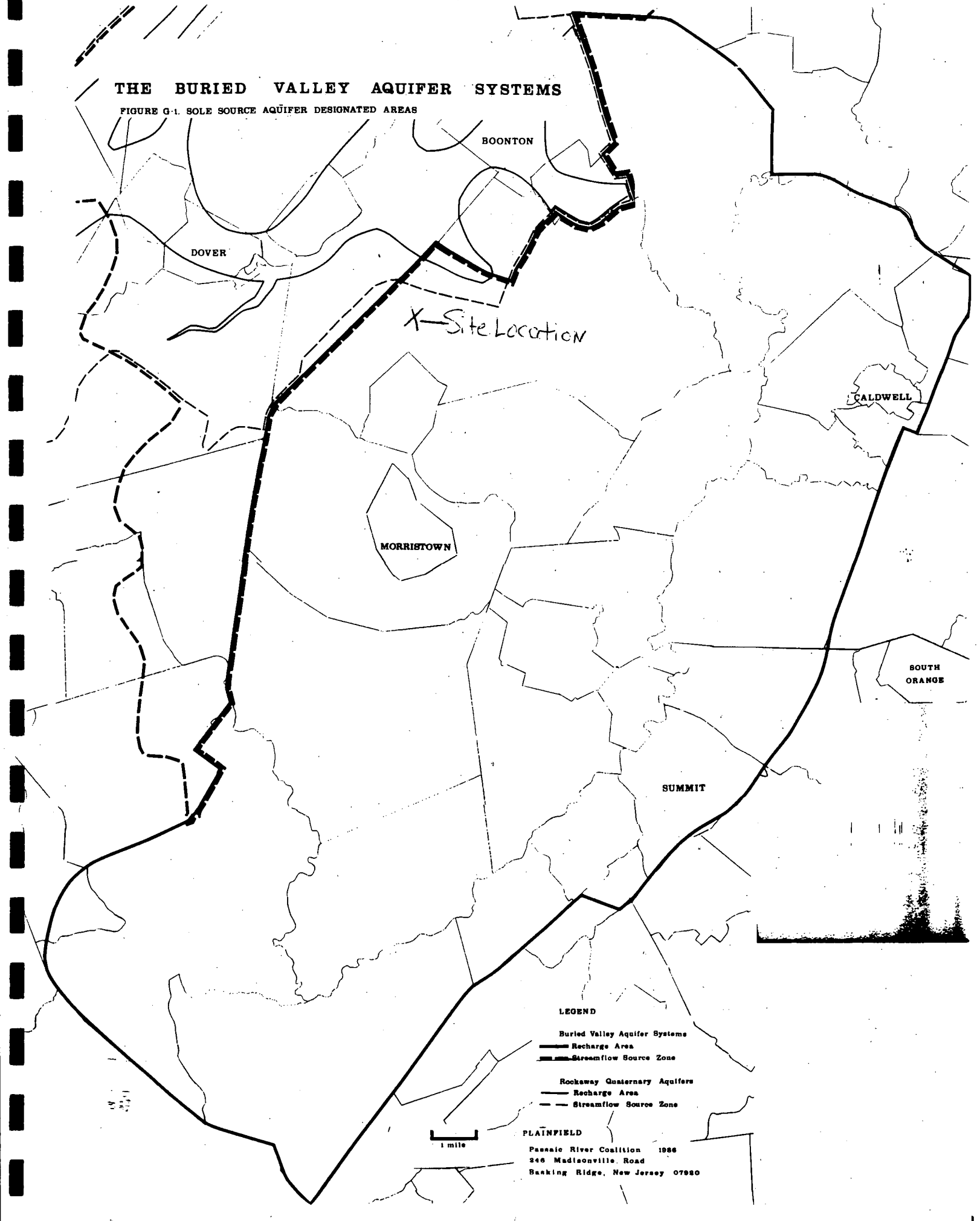
INTRODUCTION

The Buried Valley Aquifer Systems Region

Nearly one-half of New Jersey's residents rely on ground water for potable water supplies. The major aquifers of New Jersey are the Coastal Plains aquifers used by the shore communities, the Potomac-Raritan-Magothy aquifer used by Delaware River communities in southern New Jersey, and the buried valley (or valley-fill) aquifers of glaciated areas in northern New Jersey. The Buried Valley Aquifer Systems region is included within the last category.

In terms of political boundaries (see Figure G-1), the Buried Valley Aquifer Systems region encompasses the western parts of Essex and Union Counties, northern Somerset County and north, central and eastern parts of Morris County. Hydrologically, the region includes the Central and Upper Passaic River Basin, the Whippany River watershed, the Rockaway River watershed, and the Upper Lamington River watershed. The Upper Lamington River is part of the Raritan River Basin while the remainder of the region is included within the Passaic River Basin. The aquifer underlying the Upper Lamington is directly connected with the aquifer of the Rockaway River watershed and so is included within the region.

The Buried Valley Aquifer Systems region is characterized by a network of former river valleys which were filled with glacial outwash material by the Wisconson glacier which covered much of northern New Jersey until some 11,000 years ago. The **buried valley aquifers** thus formed are often contiguous and hydraulically connected to aquifers in the fractured bedrock below. The buried valley aquifers are prolific regionally, supplying over 40 million gallons per day for potable use. The bedrock aquifers are locally prolific, especially dolomite formations in the west and some shale areas in the east.


THE BURIED VALLEY AQUIFER SYSTEMS
FIGURE G-1. SOLE SOURCE AQUIFER DESIGNATED AREAS
BOONTON
DOVER
X—Site Location
CALDWELL
MORRISTOWN
SOUTH ORANGE
SUMMIT
LEGEND
Buried Valley Aquifer Systems
Recharge Area
Streamflow Source Zone
Rockaway Quaternary Aquifers
Recharge Area
Streamflow Source Zone
1 mile
PLAINFIELD
Passaic River Coalition 1986
246 Madisonville Road
Basking Ridge, New Jersey 07920

The region includes two "sole source aquifers" designated by the United States Environmental Protection Agency. The Buried Valley Aquifer Systems of the Central Passaic River Basin was designated in 1980, while the Rockaway Valley Quaternary Aquifer was designated in 1984. Recent hydrogeologic studies clearly show that the two aquifer systems are in fact one, fully connected through a formerly unknown buried valley. Therefore, this report treats the two designated areas as one, called the **Buried Valley Aquifer Systems.**

Importance of Ground Water to the Region

Ground water has played an ever-increasing role in supplying the water needs of residents and businesses throughout the Passaic River Basin and, indeed, throughout New Jersey. Within the basin, the most productive and intensively used aquifers are the buried valley (or valley-fill) aquifers. The buried valley aquifers form an extensive network of narrow-channeled sand and gravel deposits through which large quantities of water flow. They are located in many parts of the Passaic River Basin which were affected by the latest glaciation (the Wisconsin) and are most heavily concentrated in northern and eastern Morris County and western Essex County. Public water purveyors began tapping the buried valley aquifers around the turn of the century. Now, the use of the aquifers has reached major proportions, supplying the majority of water used in a number of municipalities, and providing water for over one-half million people and scores of major industries.

The intensive use of the aquifers, coupled with their high potential for contamination and loss of recharge, led municipalities and citizen organizations to pursue local, state and federal methods for protecting the ground water resources of the area. At the same time, the compilation of existing information on the buried valley aquifers was begun for use by decision-makers throughout the region. This report is the result of the second phase of efforts to understand the characteristics of the aquifers, and ground water use and contamination, so that this knowledge might be applied toward improved management of the aquifer systems. The first phase concluded in 1983 with the publication of the Hydrogeology of the Buried Valley Aquifer Systems. This second report enlarges upon the first, makes use of new findings from research of the State and federal governments, updates information on ground water diversions, and provides a first-time overview of contamination incidents and issues within the region.

of such rocks can vary considerably within a short distance, both horizontally and vertically. Because fractures are wider toward the surface due to weathering, a well in Precambrian rock is unlikely to supply much water below 300 feet. The 79 large-diameter public supply, industrial, and commercial wells in Precambrian rock that operated in 1965 throughout Morris County yielded an approximate average of 121 gallons per minute (gpm), and the maximum and minimum yields were 400 and 5 gpm respectively. The larger amounts are usually associated with fault zones (Gill and Vecchioli, 1965).

Water quality from Precambrian wells is generally good. Hardness ranges from soft (less than 50 ppm) to moderately hard (60-120 ppm); pH ranges from slightly acidic to slightly alkaline; and iron occurs in objectionable quantities in some areas (Gill and Vecchioli, 1965).

Carbonate Rocks

The primary carbonate rock aquifer in the study area is that of the Kittatiny Formation. This is a long, deep, narrow bed of dolomitic limestone from the Paleozoic Era. Gill and Vecchioli (1965) reported that the five major wells developed in the dolomite at the time had yields ranging from 40 to 380 gpm. They suggested that the Kittatiny Formation had the potential for moderate to large ground water supplies. The Alamatong well field has Well 5 with a yield of 500 gpm and the potential for greater yields, in the Lightsville Dolomite. Markewicz (personal communication, 1986) reports that other dolomite wells have yields of up to 3000 gpm in the Pequest Valley (Warren County). He estimates, based on the sketchy data available to date, that 10 to 15 mgd may be available from the various dolomite deposits.

Newark Group: Brunswick Formation

The Brunswick Formation serves as an aquifer in the following communities of the Buried Valley Aquifer Systems: Chatham Borough, East Hanover Township, Florham Park Borough, Hanover Township, Harding Township, Lincoln Park Borough, Montville Township, Morris Township, Town of Morristown, Parsippany-Troy Hills Township, and Passaic Township in Morris County; Caldwell Borough, Fairfield Township, Livingston Township, Millburn Township, North Caldwell Borough, Roseland Borough, West Caldwell Borough, and West Orange Town in Essex County; Bernards Township, Bernardsville Borough and Warren Township in Somerset County;

and Berkeley Heights Township, New Providence Borough, Summit City in Union County (Gill and Vecchioli, 1965; Nichols, 1968a; Nemickas, 1976).

The approximately 6,000 feet-thick Brunswick Formation is composed of shale with local occurrences of sandy and pebbly consolidated beds. The sandstone ranges from a few inches to 20 feet in thickness. The many joints and fractures in the rock allow for retention and transport of a fairly large volume of ground water. Wells yield from 4 to 650 gpm in Morris County, from 35 to 820 gpm in Essex County, and from 12 to 870 gpm in Union County (Gill and Vecchioli, 1965; Nichols, 1968a; Nemikas, 1976). Wells of greatest yield are usually those between 200 and 500 feet deep where several source zones feed the well, and is usually hard.

Newark Group: Watchung Basalt

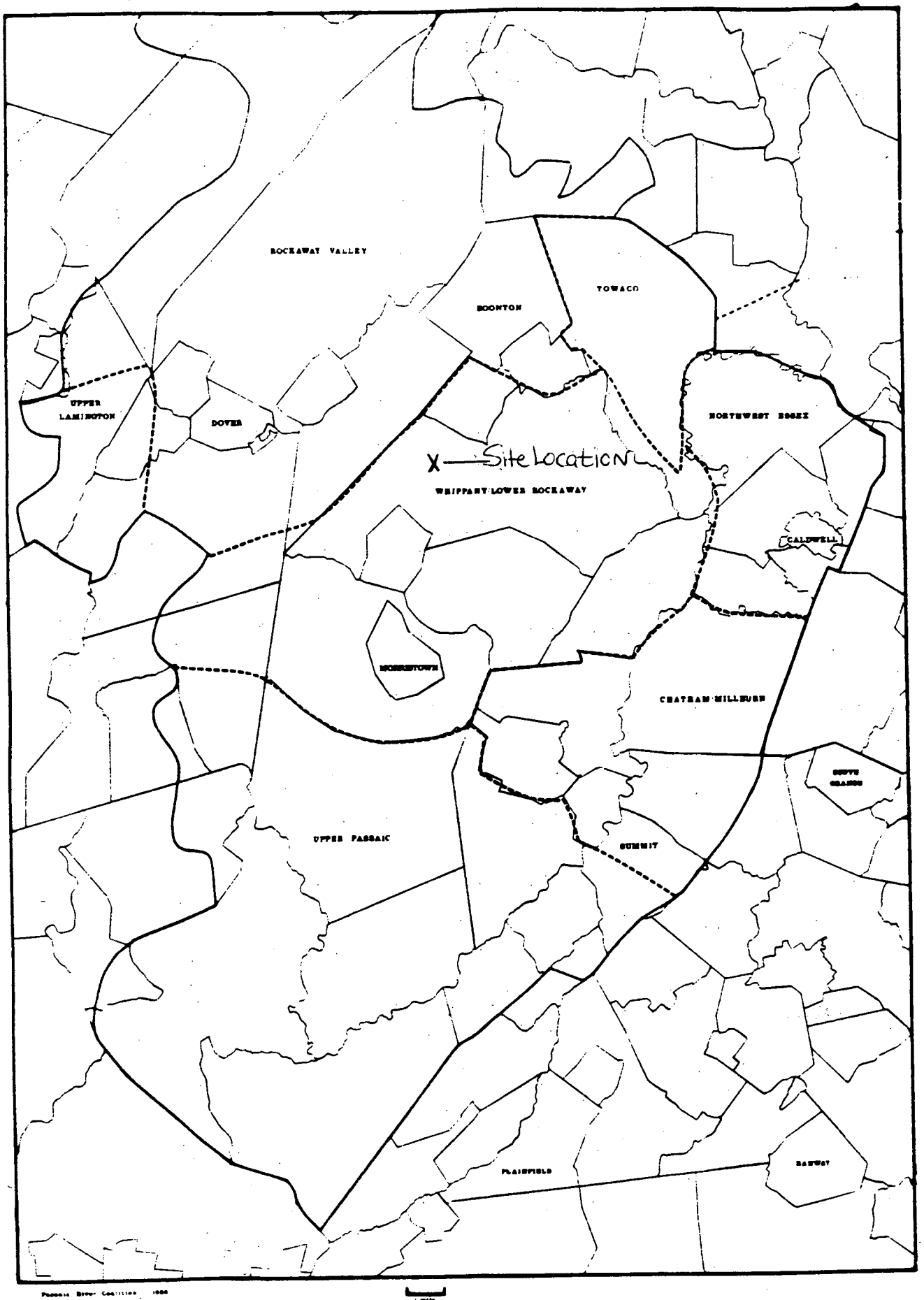
The Basalt Formation serves as an aquifer in the following communities within the study area: Florham Park Borough, Lincoln Park Borough, and Montville Township in Morris County; Essex Fells Township, Fairfield Township, Livingston Township, Millburn Township, North Caldwell Borough, West Caldwell Borough, and West Orange Town in Essex County; Warren Township in Somerset County; and Berkeley Heights Township, New Providence Borough, and Summit City in Union County (Gill and Vecchioli, 1965; Nichols, 1968a; Nemikas, 1976). The basaltic flows of the Watchung Mountains serve as a small source of ground water in the study area. Water is usually concentrated in gas-created vesicles and fractures in the rock. Wells yield volumes of 30 to 53 gpm from depths of less than 300 feet in Morris County (Gill and Vecchioli, 1965); from 7 to 400 gpm in Essex County (Nichols, 1968a); and from 20 to 164 gpm in Union County (Nemikas, 1976). Water from the Watchung rocks is usually hard, ranging from 60 to more than 180 gpm. Some wells also have high sulfate, iron and manganese levels (Gill and Vecchioli, 1965).

Pleistocene Deposits

The Pleistocene glacial deposits serve as aquifers in the following study area communities; Chatham Borough, Denville Township, Dover Town, East Hanover Township, Florham Park Borough, Hanover Township, Madison Borough, Montville Township, Morris Township, Morris Plains Borough, Mountain Lakes, Parsippany-Troy Hills Township, Rockaway Borough, Rockaway Township, Roxbury Township and Wharton Borough in Morris County; and Essex Fells Borough, Fairfield Borough, Livingston Township, Millburn Township, and West Orange Town in Essex County (NJDEP, 1985).

THE BURIED VALLEY AQUIFER SYSTEMS

FIGURE IV-1, SUBREGIONS OF THE STUDY AREA.



2) Upper Lamington Aquifers--The Upper Lamington (or Black) River watershed includes aquifers tapped by the Morris County Municipal Utilities Authority and the Roxbury Water Company, in the municipalities of Mine Hill, Roxbury, Randolph and Chester Township. This subregion is considered separately from the Rockaway, though the aquifers are connected to the Rockaway system to the north.

3) Towaco Aquifer--The Towaco Buried Valley in Montville Township does not connect with the buried valley aquifers to the west, but may connect to the buried valleys of the Northwest Essex Subregion by way of the east through Lincoln Park, Wayne and Fairfield. The Towaco is considered as a separate subregion.

4) Northwest Essex Aquifers--The broad valley-fill sediments of Fairfield and the upgradient aquifers of the Caldwells, Essex Fells and Roseland comprise this subregion. The remaining municipalities of West Essex are included within the Chatham/Millburn Aquifers Subregion.

5) Whippany/Lower Rockaway Aquifers--The aquifer underlying the lower Rockaway River between Parsippany and Montville is apparently not connected to the upper Rockaway system, but rather connects to the south with deposits underlying the Whippany River watershed. Parsippany-Troy Hills is almost entirely within the Whippany watershed, as are Morristown, Morris Plains, Morris Township, Hanover, and western East Hanover. The Rockaway Valley subregion is apparently continuous with the major buried valley which traverses the Troy Brook watershed of Parsippany, but Parsippany is considered separately from the Rockaway Valley.

6) Chatham/Millburn Aquifers--This subregion with the longest history and greatest intensity of use is located just north of the terminal moraine in east-central Morris County and nearby portions of Essex County. The municipalities of Madison, Chatham Borough, Florham Park, Summit, Millburn, Livingston and eastern East Hanover comprise the subregion. The Chatham, Southern Millburn, Northern Millburn, Canoe Brook and Slough Brook Buried Valley Aquifers are within the area.

7) Upper Passaic--There are no major buried valley aquifers known in the Upper Passaic, located upstream (south) of the terminal moraine in Chatham Township, Passaic Township, Harding, Summit, Berkeley Heights, New Providence, Warren Township, Bernards Township, and portions of Mendham and Bernardsville. The subregion relies on ground water from shale and precambrian rocks, and contributes significantly to the base flow of the Passaic River.

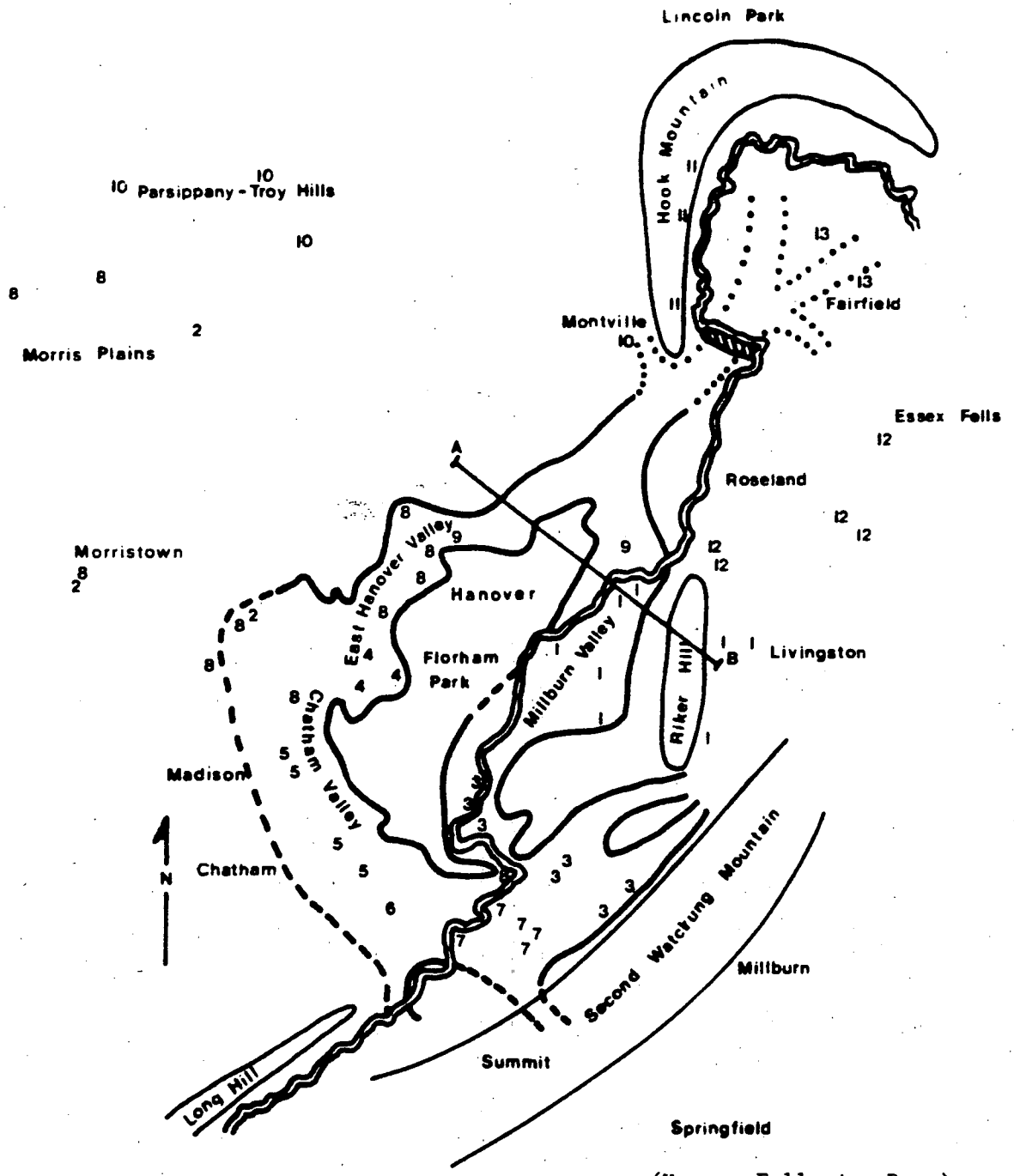
were drilled in five areas during the first year of study. During the second year, fourteen test well holes were drilled over a broad area in Chatham, Madison and Florham Park Boroughs (to explore for new resources capable of accommodating major production of wells) (Figure IV-7).

Area 1 was located along the eastern edge of Black Meadows in Florham Park Borough, Hanover Township and East Hanover Township. This area was the most productive of the area tested because of the existence of a very permeable sand and gravel aquifer extending nearly 100 feet in depth. The deepest deposits and thickest productive strata underlie OEP (Office of Emergency Preparedness) test wells 1, 2, and 3 along Black Brook (Figure IV-8). A cross-section through this area is shown in Figure IV-9. The various sediment sequences, although generally similar, illustrate the complexity of glacial deposition (Vecchioli and Nichols, 1966). The logs of existing wells in the area show that the majority have layers of coarse sand and/or gravel that serve as productive aquifers.

Area 2 was located along the western edge of Troy Meadows in Parsippany-Troy Hills Township (Figure IV-10). This area also has a permeable sand and gravel aquifer in the location of the two test wells, where the thickness ranges from 20 to 50 feet. A cross-section of this area is shown in Figure IV-11. While neither test hole 1 nor 2 showed any permeable materials, Production Well 5 (Figure IV-10) located near test hole 3 is very productive. The relationship of Production Well 5 to other parts of the buried valley system was not known (Vecchioli and Nichols, 1966). Existing well logs around Area 2 also show the water-bearing sand and gravel sediments which provide abundant supplies of ground water. The bedrock contours of this area were not well defined.

Area 3 was located along the west side of Interstate 287, north of State Route 10, and south of Lake Parsippany in Hanover and Parsippany-Troy Hills Townships (Figure IV-12). The test holes failed to indicate permeable materials that were thick enough or well enough sorted to serve as aquifers. It was believed unlikely, based on those test holes, that the area had a major buried valley aquifer.

Area 4 also was located in Parsippany-Troy Hills (Figure IV-13). Two test holes were drilled in this area, and one of these was completed as a test well. Neither was completed to bedrock. These tests show that moderately permeable sand and gravel deposits occur to depths of at least 100 feet, under very leaky artesian conditions. Well logs of the three existing public supply wells also show thick layers of sand and gravel.



(Key on Following Page)

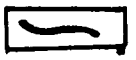
Figure IV-19 Estimated Location of Buried Valley Aquifers, with Well Locations

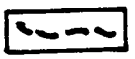
Source: Adapted from:
Meisler, 1976; Nichols, 1968b; Geraghty and Miller, 1978.

Key to Figure IV-19

(Numbers on map correspond to locations and owners of public supply and industrial wells)

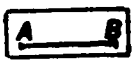
1 Livingston Township Water Department
2 Southeast Morris County Municipal Utilities Authority
3 East Orange Water Department
4 Florham Park Water Department
5 Madison Water Department
6 Chatham Borough Water Department
7 Commonwealth Water Company
8 Industrial Wells[a]
9 East Hanover Water Department
10 Parsippany-Troy Hills Water Department
11 Montville Water Department
12 Essex Fells Water Department
13 Fairfield Water Department


Boundary of Valley-Fill Deposits


Inferred Boundary of Valley-Fill Deposits


Nichols, 1968b- continuation of the buried valley deposits inferred from bedrock topography


Geraghty and Miller, Inc., 1978 - potential recovery of .5 to 1.0 mgd from stratified drift deposits. Should be protected from development until further studies are completed.



Cross-Section Area


Passaic River

---

[a] Industrial and private well owners are as follows:

Suburban Propane Gas Corporation, Sandoz Incorporated, Wilbur B. Driver Incorporated, Allied Chemical Corporation, Orange Products Incorporated, Exxon Research and Engineering, Morris County Golf Club.
(Note other well owners may exist but are not listed here.)

Source: Meisler, 1976; Nichols, 1968b; Geraghty and Miller, 1978

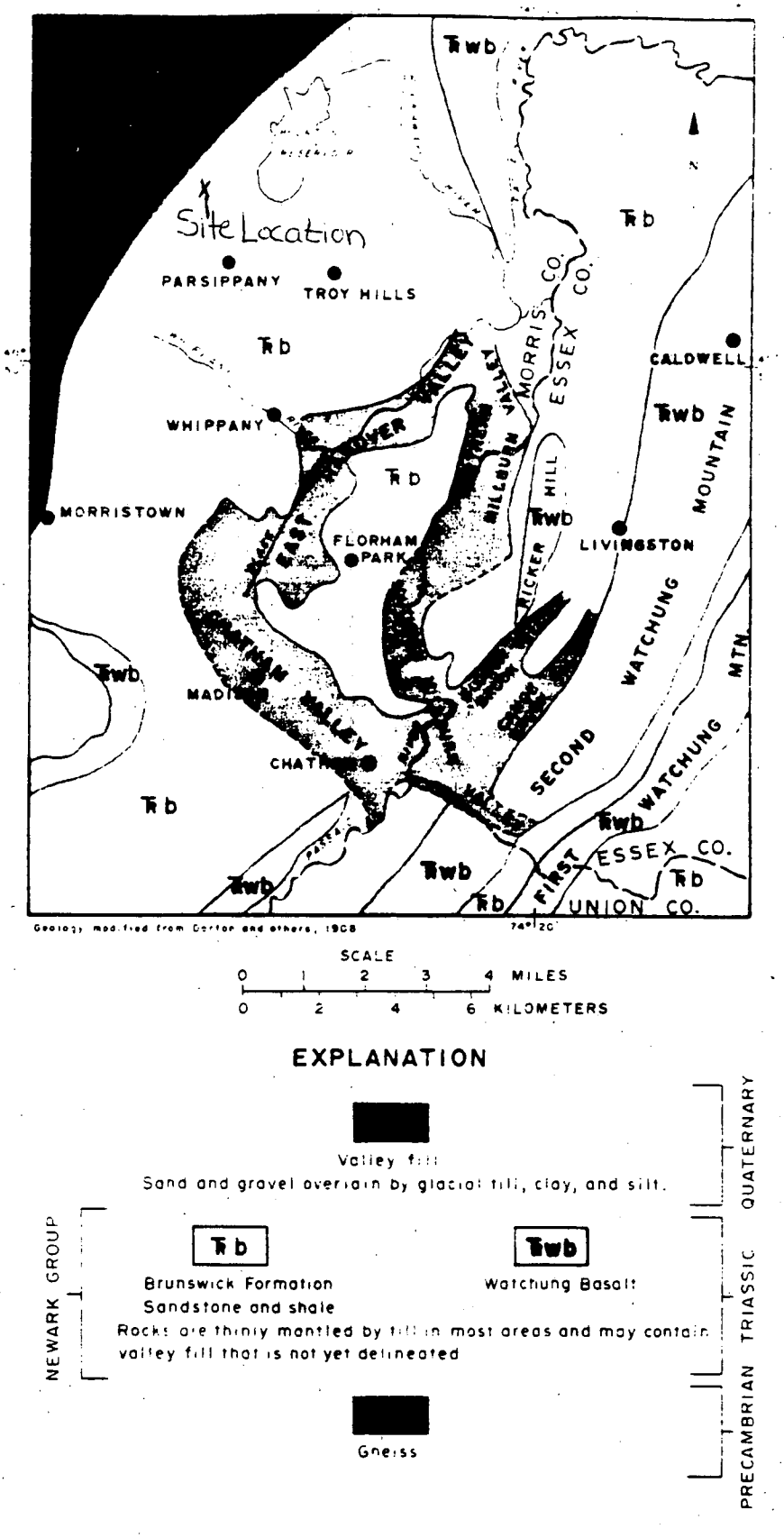


Figure IV-20 Generalized Geologic Map of Southwestern Essex and Southeastern Morris Counties

Source: Meisler, 1976.

feathers up again toward Route 15 and Picatinny Arsenal. The dolomite exceeds 600 feet in at least one well.

The NJ Geological Survey determined that the Upper Lamington Buried Valley does continue through Roxbury Township and the well field of the Roxbury Water Company but the precise stratigraphy is not known. The valley sides are rather steep, rising over 100 feet from the valley floor.

Towaco Aquifer Subregion--The Towaco Aquifer consists of broad bands of stratified drift which reach a maximum depth of over 250 feet. Despite the small watershed, the aquifer has a very large storage volume. Figure IV-23 shows a generalized cross-section of the Towaco Buried Valley.

Northwest Essex Subregion--All of Fairfield is underlain by stratified drift deposits with overlying clays deposited by glacial Lake Passaic. The clays are sometimes as deep as 90 feet. Below approximately 100 feet, Brunswick formation is encountered. A simple stratigraphic representation of the eastern portion of the Great Piece Buried Valley is given in Figure IV-27.

The stratified drift aquifer tapped by Wells 1A, 2, 7 and 14 of Essex Fells is apparently narrow, with depths ranging from 90 to 125 feet, and has a variety of strata composed of fine sands, coarse sand and gravel, clay lenses, and hardpan. The channel apparently runs in the approximate line of North Branch Foulerton Creek between Runnemede Road and Deerfield Road.

Whippany-Lower Rockaway Subregion--Figure IV-28 shows the well logs from two new wells in the Troy Brook Buried Valley, one at Mazdabrook Road and the other at Forge Pond. The Forge Pond well shows the sand aquifer confined between two layers of till. Figure IV-29 represents a cross-section of the buried valley in the same area. At the southeast end of the expected buried valley route, a recent Superfund study at the Sharkey Landfill indicates the existence of a thick confining layer of clay between a confined and unconfined aquifer (see Figure IV-30). A bedrock channel trending from the northeast to the southwest may also exist at the site (at the confluence of the Rockaway and Whippany Rivers).

The East Hanover Valley is a valley-fill aquifer with stratified drift deposits of sands, gravels, and clays from glacial Lake Passaic. The aquifer is semi-confined. The same is apparently true of the Lee

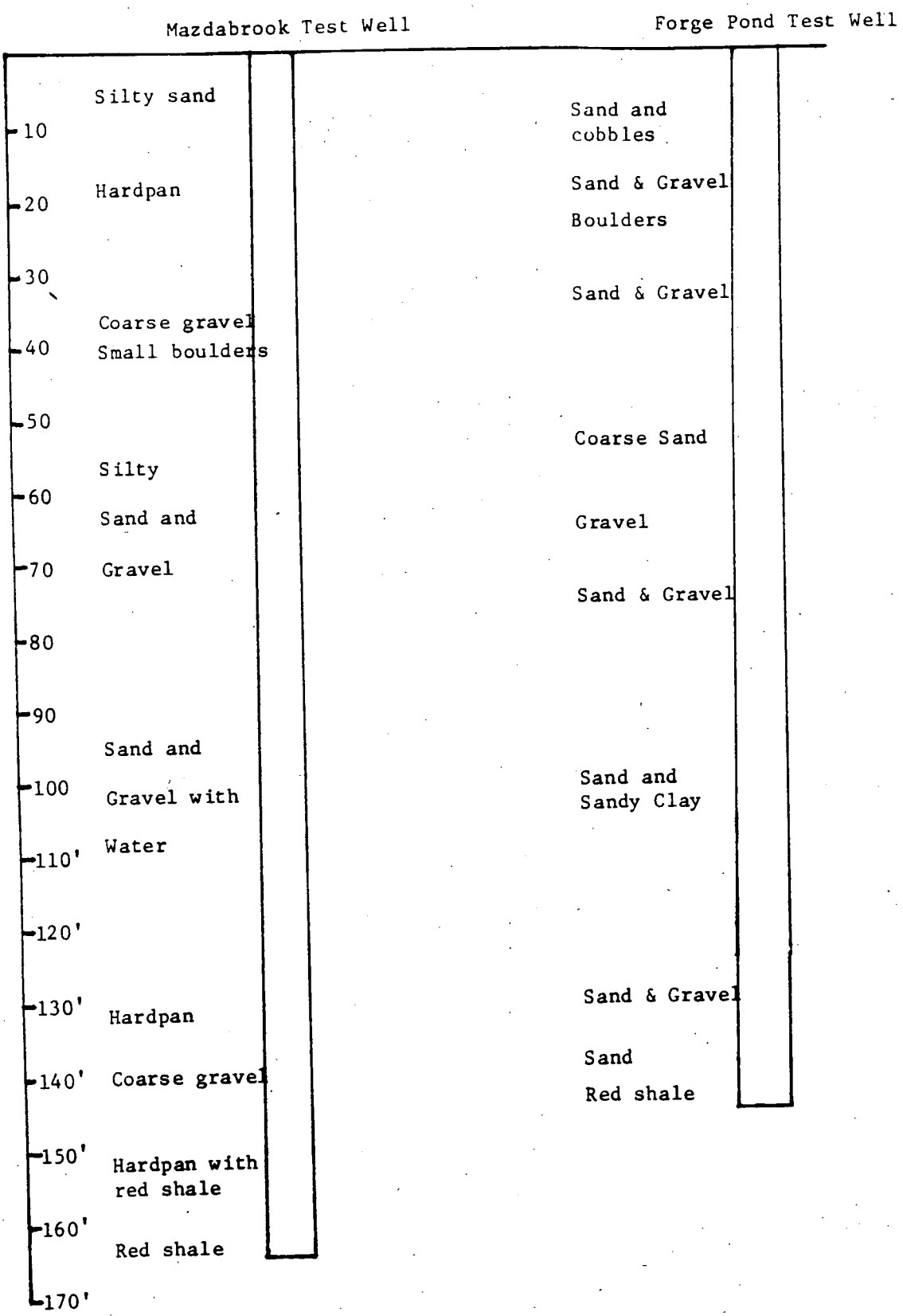


Figure IV-28. Well Logs in Troy Brook Buried Valley, Mazdabrook and Forge Pond Wells

Source: N.J. Geological Survey files, 1986.

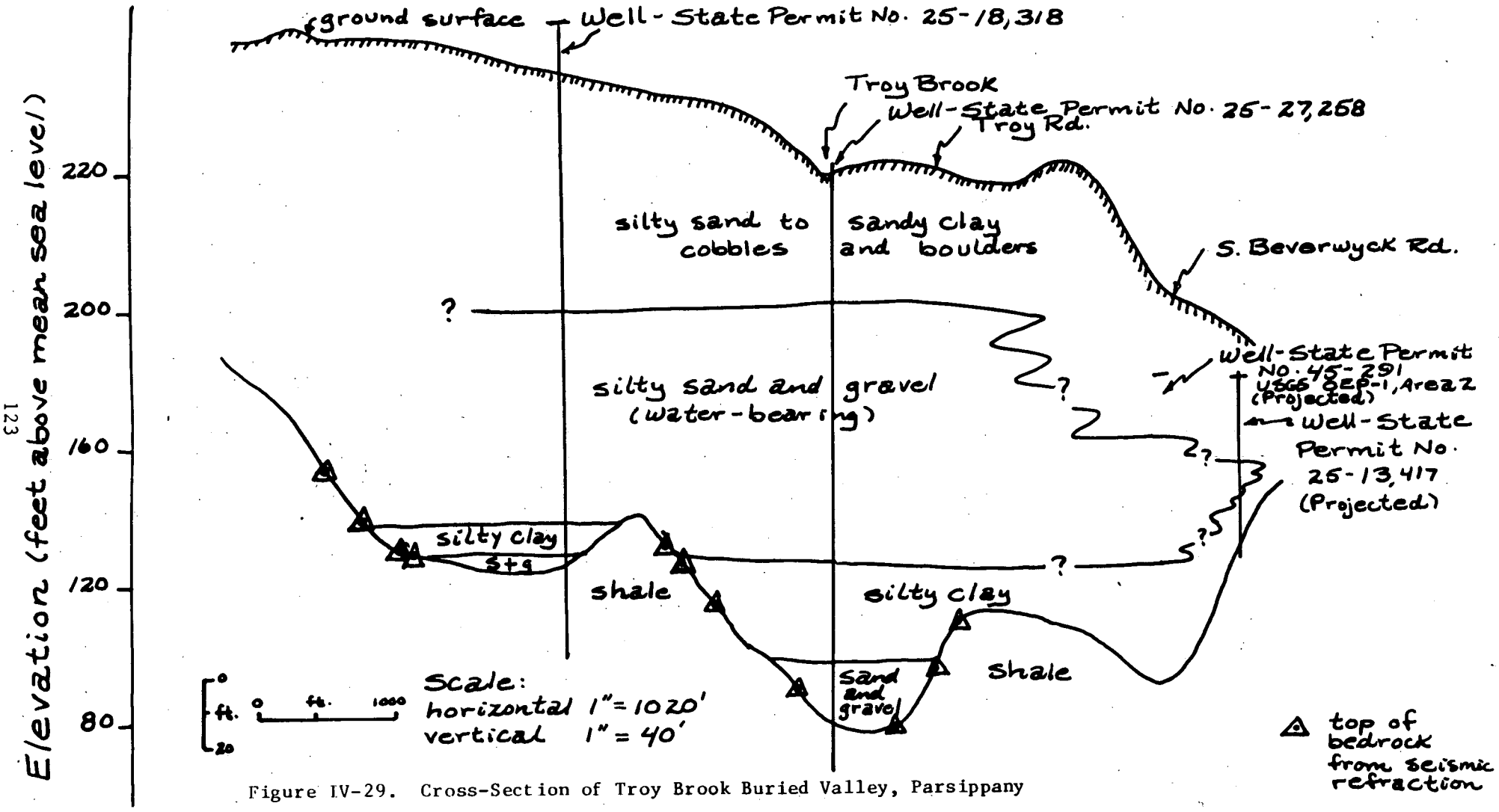


Figure IV-29. Cross-Section of Troy Brook Buried Valley, Parsippany

Source: Robert Canace, N.J. Geological Survey, 1986

Meadows aquifer. As with all of the valley-fill aquifers, the East Hanover Buried Valley has a complex stratigraphy. Borings for Florham Park's Well 4 suggest two aquifers separated by unstratified till, with the upper aquifer also capped by till. The lower aquifer was found to be 60 to 70 feet thick and confined. The upper aquifer was less thick and not confined.

Chatham/Millburn Valley Subregion--The USGS map of bedrock contours, prepared by Nichols (1968) shows the contours of the Chatham Valley but does not indicate stratigraphy for the aquifer itself. Data from Chatham Borough's wells indicates a depth of approximately 157 to bedrock, with glacial deposits of 143 feet and water bearing sand and gravel of nearly 50 feet above the bedrock and hardpan strata. Apparently no surface geophysical work has been performed to determine stratigraphy for the surrounding aquifer area. Bedrock in the well fields of Madison is approximately 160 feet below grade. A 20 foot thick layer of coarse sand exists just above bedrock and is confined by a clay-hardpan layer at 60 to 90 feet below grade.

The general area of the Commonwealth well field near the Passaic River (and that of East Orange) was investigated by Thompson (1932). More recent studies have defined further the contours of bedrock in the area, broad outlines of the stratigraphy, and some recharge areas. The large number of wells in the Canoe Brook/Passaic River well field has yielded useful information on stratigraphy. The contours of the bedrock in the area are known and mapped. The stratified drift deposits are quite complex, consisting of sand and gravel strata which interbed with clay lenses and silts. Not all of the sand and gravel layers are water bearing, not all allow the free flow of water, and not all are sufficiently interconnected to supply water in sizable quantities. Figure IV-3 shows a generalized cross-section of the Canoe Brook Buried Valley. The evidence shows a complex stratigraphy. Deposits are fairly continuous in the deepest parts of the buried valleys, but not in fringe areas and the upper (shallower) portions of the channels, nor near the surface. The channel centers are the most productive, with shifts according to bends in the channel.

The Millburn Buried Valley ranges in depth from 140-170 feet. It is extremely variable with some highly productive areas and some areas with thick clay beds.

Hydraulic Connection Among Contiguous Aquifers

When the Wisconsin glacier moved into New Jersey, it scraped up vast quantities of soil and rock from the land surface, carrying them forward and depositing the materials in the terminal and ground moraines, as stratified drift and as silts and clays in Glacial Lake Passaic. In the buried valleys, geologists suggest that most or all of the soil from the sides of the valleys would have been stripped off. The stratified deposits which constitute the buried valley aquifers would thus be in direct contact with the bedrock aquifers, allowing free flow of water across the boundary (Meisler, 1976). In this manner, water which is recharged to the bedrock may serve to replenish a part of the water discharged from the buried valley aquifers through swamps and marshes, stream base flow, springs and wells (Nichols, 1968a). In some cases, the flow may be reversed, where water from the buried valleys enters the bedrock (especially where large wells draw from bedrock below or beside a buried valley).

The direction of flow depends on the hydraulic gradient; in other words, which direction is "downhill" for the water. Where the bedrock serves as a recharge source for a buried valley aquifer, the long-term productivity of the system is improved, overcoming the limitations caused by the narrow channels of the buried valleys (Geonics, 1979b).

The less permeable materials of a buried valley (fine sands, silts, clays, muck soils, nonstratified till) also can serve as valuable storage areas for water which can eventually recharge the sand and gravel aquifer. Fine sands, for example, are quite porous but relatively impermeable. They can hold large quantities of water but release it too slowly for major production wells. Over a wide area, these deposits could play a significant role in aquifer recharge (Geonics, 1979b).

Regional and Local Ground Water Flow

Ground water flows at a relatively slow pace, often measured in feet per day or even feet per year. The determination of ground water flow rates and directions is critically important in ground water contamination investigations, well zone protection, water budget preparation and the understanding of aquifers as systems rather than isolated components.

Ground water flow is described in "flow nets" which describe the three dimensional aspects of flow direction and velocity. As geologic conditions change, the ground water may flow faster or slower, over a

broad area or through a restriction, up or down in elevation. However, ground water always flows along a gradient determined by gravity and pressure. Water table aquifers flow downgradient along the apparent surface of the aquifer. Confined aquifers also flow "down" but the gradient is measured differently, by the amount of pressure on the water at any point in the aquifer.

Natural ground water flow nets may change with precipitation. For instance, water may flow toward a river in wet seasons but away from the river in dry seasons. Natural flows may also be altered by pumping from the aquifer. In the vicinity of the pump, ground water will tend to flow toward the pump instead of in the natural (regional) flow direction because the pump artificially creates a depression in the aquifer. This depression becomes "down" for nearby water. Table IV-2 provides some measurements for the radius of influence of major wells in the region.

Research on ground water flow nets is lacking in the Buried Valley Aquifer Systems. Most of the data collected to date derive from contamination investigations, where mapping of the contaminant plume reveals the ground water flow. In most subregions and local areas of the aquifer systems, only the most limited understanding of flow exists. Precise flow nets have been determined in a very few areas, such as the Dover portion of the Rockaway Aquifer through USGS research.

Figure G-5 (in pocket) is a compilation of existing knowledge and inferrences about the flow of ground water to and within the buried valley aquifers. This map should be used only as a general guide.[1] Very little of the ground water flow information has been rigorously determined. Figure G-5 represents an initial attempt at mapping the gross flow net of the region. A final product will require considerable research, beyond the scope of this study. However, the map may be useful in defining the information needs for development and contamination review.

[1] Please inform the Passaic River Coalition of any new information which tends to support or oppose the regional flow net indicated on Figure G-5 or provides additional information in areas where no flow directions are indicated.

TABLE V-2

PUBLIC COMMUNITY AND NONPUBLIC WATER CONSUMPTION BY MUNICIPALITY
BURIED VALLEY AQUIFER SYSTEMS, MORRIS COUNTY MUNICIPALITIES, 1980

Municipality	Total Population	Population Served by Public Supply	Per Capita Water Use	Avg. Water Use (MGD)	Population Served Nonpublic Supply	Avg. Water Use (MGD)
Boonton, Town of	8,620	8,620	132	1.14	---	---
Boonton Township	3,273	398	128	0.05	2,875	0.20
Chatham Borough	8,537	8,537	122	1.04	---	---
Chatham Township	8,883	7,540	81	0.61	1,343	0.09
Denville Township	14,380	12,942	134	1.73	1,438	0.10
Dover, Town of	14,681	14,681	161	2.36	---	---
East Hanover Township	9,319	7,428	148	1.10	1,891	0.13
Florham Park Borough	9,359	9,359	119	1.11	---	---
Hanover Township	11,846	11,846	126	1.49	---	---
Harding Township	3,236	891	127	0.11	2,345	0.16
Jefferson Township	16,413	6,602	58	0.38	9,811	0.69
Kinnelon Township	7,770	3,980	65	0.26	3,790	0.27
Madison Borough	15,357	15,357	124	1.90	---	---
Mendham Borough	4,899	4,899	131	0.64	---	---
Mendham Township	4,488	1,511	86	0.13	2,977	0.21
Mine Hill Township	3,325	1,531	91	0.14	1,794	0.13
Montville Township	14,290	6,291	155	0.98	7,999	0.56
Morris Plains Borough	5,305	5,305	111	0.59	---	---
Morristown, Town of	16,614	16,614	102	1.69	---	---
Morris Township	18,486	15,354	119	1.83	3,132	0.22
Mountain Lakes Borough	4,153	4,153	149	0.62	---	---
Parsippany-Troy Hills Twp	49,868	49,868	112	5.59	---	---
Passaic Township	7,275	6,564	81	0.53	711	0.05

Fairfield Township--Fairfield is located almost entirely over stratified drift deposits. Three of its seven wells draw from the stratified drift, while the others penetrate through to bedrock at depths of 200 to 300 feet (the stratified drift wells are 90 to 100 feet in depth). Approximately 4400 people, all in Fairfield, are served by the system. Standby supplies are also available from Passaic Valley Water Commission.

The municipal water system began in the early 1960's, with all wells in place by 1976. Of 2300 households in Fairfield, 1250 are on the system, along with most of the industry. Approximately 100 non-residential wells still are in use along with domestic wells supplying 3600 people. Two municipal wells have been closed due to contamination.

Whippany-Lower Rockaway Subregion

East Hanover Township--East Hanover derives all of its public water supply from two wells in the East Hanover Buried Valley north of Route 10. The two wells penetrate the aquifer to a depth of 115 and 120 feet through glacial outwash deposits. Well 2 (Melanie Lane) has a capacity of 1000 gpm and Well 5 (Homestead Avenue) has a capacity of 800 gpm. A third well (Well 6) in the same buried valley, almost half way between Wells 2 and 5, was drilled and tested in 1985. Well 6 has a similar depth and a yield of between 1200 and 1500 gpm. Wells 1 and 3 are now observation wells for the DEP, and Well 4 was sealed. Well 2 is being treated for contamination by volatile organic compounds.

East Hanover has a diversion allocation of 52.523 MGM for a service population of slightly over 8000 residents and some industries. Several industries (notably Sandoz, JCP&L and Calcugraph) have private wells, as do over 800 homes (20 per cent of the residences).

Mountain Lakes Borough--Mountain Lakes relies entirely on ground water derived from one major well and three backup wells. The main well and one of the backup wells penetrate through stratified drift deposits into bedrock, while the other two backup wells are in the stratified drift deposits. Only the main well (Well 5, at 1000 gpm) exceeds 400 gpm. Mountain Lakes has an allocation of 30 MGM, with 95 per cent of its supply coming from Well 5. The system serves 5,210 people.

Parsippany-Troy Hills Township--Parsippany is the largest single community in Morris County, in terms of population. The water supply is entirely derived from wells located within the municipality. The

Parsippany Water Department provides potable water to approximately 50,000 residents and a variety of office parks and light industries. There are very few private wells remaining, all of which have the option of public water.

The wells are not concentrated in any single field. Two clusters of wells contain a total of 12 wells, with the remaining 5 wells in independent locations. The major well concentration is along Troy Brook west of Route 202 and south of Route 46. Wells 1A, 4, 4A, 9, 10, 17 and 18 all draw from deep stratified drift deposits ranging up to 150 feet in depth below grade. The most productive wells draw from strata at least 60 feet in depth, with Wells 4A (900 gpm), 17 (700 gpm) and 18 (750 gpm) having the largest yields.

Five wells (8A, 8B, 8C, 11 and 13) are located along the western side of Troy Meadows, a large freshwater wetland. Well 11 has a very low yield, due to very fine sediments. It and nearby Well 13 are relatively shallow wells drilled to bedrock in glacial deposits. Wells 8A, 8B and 8C are located within a concentrated area upgradient from the wetlands area and have yields of 300, 400 and 600 gpm respectively. Each of the three draws from stratified deposits at a level of 60 to 80 feet below grade.

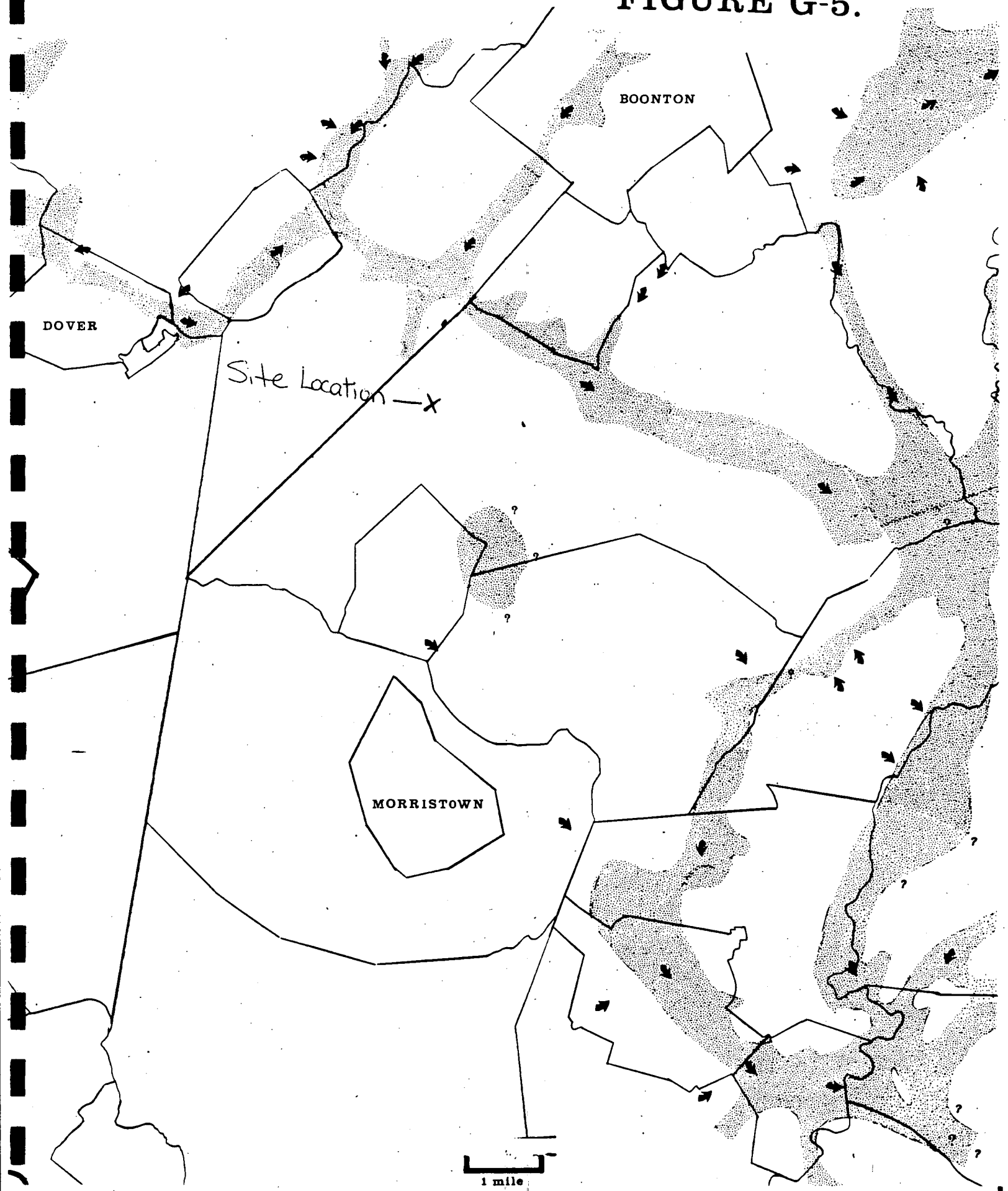
The remaining five wells are Well 3 (southeast of the Jersey City Reservoir), Well 7 (Jefferson Avenue and Halsey Road), Well 12 (Lake Parsippany), Well 14 (in Lee Meadows near Dryden Way) and Well 15 (North Beverwyck Road and Route 46). Of these, Well 14 is the best producer with a pumping capacity of 700 gpm. All five of the wells draw from stratified glacial deposits. None of Parsippany's wells are drilled into the bedrock.

Parsippany is drilling additional wells in locations identified through hydrogeological studies. Two of these have been drilling in the Troy Brook Buried Valley east of Interstate 287, one near Mazdabrook Road and the other near Forge Pond.

Southeast Morris County Municipal Utilities Authority--The SMCMUA (formerly the Morristown Water Department) owns and operates a small reservoir (Clyde Potts, in Mendham Township in the Whippany River watershed) and 11 wells in Morristown, Morris Plains and Hanover. The SMCMUA supplies water to Morristown, Morris Township, Morris Plains, Hanover and Mendham Township and Harding, primarily, with small supplies to parts of Florham Park, Harding, Chatham Township and Parsippany-Troy Hills. The total service population includes approximately 60,000

REGIONAL GROUND WATER FLOW
(Partly Conjectural)

FIGURE G-5.



REFERENCE NO. 11

competition, employment, investment, productivity, innovation, or the ability of United States enterprises to compete in domestic or export markets. Today's action only provides for an in-depth review of ground water protection measures, incorporating State and local measures whenever possible, for only these projects which request Federal financial assistance.

Dated: June 1, 1988.

Valdas V. Adamkus,

Regional Administrator.

[FR Doc. 88-14050 Filed 6-22-88; 8:45 am]

BILLING CODE [illegible]

[FRL-34029]

Sole Source Aquifer Designation for Fifteen Basin Aquifer Systems of New Jersey et al.

AGENCY: Environmental Protection Agency.

ACTION: Notice.

SUMMARY: In response to a petition from the New Jersey Department of Environmental Protection (NJDEP), notice is hereby given that the Region II Regional Administrator of the U.S. Environmental Protection Agency (EPA) has determined that the 15 basin aquifer systems of northwest NJ, including the Delawanna Creek, Flat Brook, Lopatcong Creek, Millstone River, Musconetcong River, North Branch Raritan River, Papakating Creek, Paulins Kill, Pequest River, Pochuck Creek, Pohatcong Creek, South Branch Raritan River, Shimmers Brook, Van Campens Brook and Wallkill River Basin Aquifer Systems, underlying all of Warren County, NJ; and portions of Sussex, Passaic, Morris, Middlesex, Hunterdon, Mercer and Somerset Counties, NJ, and Orange County, NY, satisfy all determination criteria as a Sole Source Aquifer (SSA), pursuant to section 1424(e) of the Safe Drinking Water Act. The basin aquifer systems of northwest NJ are the sole source of drinking water for their aquifer service area; there are no viable alternative drinking water sources of sufficient supply; and, if contamination were to occur, it would pose a significant hazard to the public health.

As a result of this action, all Federal financially-assisted projects proposed for the area will be subject to EPA review to ensure that these projects are designed and constructed such that they do not bring about, or in any way contribute to, conditions creating a significant hazard to public health.

DATES: This determination shall be promulgated for purposes of judicial review at 1:00 p.m. Eastern time on July 7, 1988.

ADDRESSES: The data upon which these findings are based are available to the public and may be inspected during normal business hours at the U.S. Environmental Protection Agency, Region II, Office of Ground Water Management, Room 842, 26 Federal Plaza, New York, NY 10278.

FOR FURTHER INFORMATION CONTACT: John S. Malleck, Chief, Office of Ground Water Management, EPA Region II, 26 Federal Plaza, Room 842, New York, NY 10278, (212) 264-5635.

SUPPLEMENTARY INFORMATION:

I. Background

Section 1424(e) of the Safe Drinking Water Act (SDWA) (42 U.S.C. 300h-3(e), Pub. L. 93-523) states:

> If the Administrator determines, on his own initiative or upon petition, that an area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health, he shall publish notice of the determination in the Federal Register. After the publication of any such notice, no commitment for Federal financial assistance (through a grant, contract, loan guarantee, or otherwise) may be entered into for any project which the Administrator determines may contaminate such aquifer through a recharge zone so as to create a significant hazard to public health, but a commitment may, if authorized under another provision of law, be entered into to plan or design the project to assure that it will not so contaminate the aquifer.

In November 1985, NJDEP petitioned EPA to declare the aquifer systems of the Coastal Plain, Piedmont, Highland, and Valley and Ridge Physiographic Provinces, as defined in the petition, a SSA under the provisions of the SDWA. The area specified in the petition submitted by NJDEP included the entire State of New Jersey except for the City of Trenton within the Coastal Plain and Piedmont Provinces in west-central New Jersey, and 69 communities within the Piedmont Province in northeast New Jersey.

In June 1987, NJDEP began to revise their petition to include only areas which were not designated previously, or petitioned for designation prior to their original petition. The revised petition uses a surface water drainage basin approach to define aquifer systems.

Initially 21 basin aquifer systems were to be included in the revised petition. However, the NJDEP determined that four of these were not eligible for SSA designation because of an insufficient ground water dependency. NJDEP developed the necessary documentation for the remaining 17. Subsequently, EPA determined that the NJDEP's ground water use methodology did not consider the entire aquifer service area populations. NJDEP revised the ground water use characterization to consider the entire aquifer service area, and another basin aquifer system was determined to be ineligible for SSA designation because of an insufficient ground water dependency. This reduced the number of basin aquifer systems under consideration to 16.

EPA determined that the Whippany River Basin, one of the 16, was already designated as part of the Buried Valley Sole Source Aquifer (45 FR 30537, May 8, 1980). Therefore, the area recommended for designation corresponds to the 15 basin aquifer systems of northwest New Jersey.

Public hearings were held on March 23, 1988 at the Sussex County Community College, Sparta, NJ, and on March 24, 1988 at the Hunterdon County Cooperative Extension Center, Flemington, NJ, in accordance with all applicable notification and procedural requirements. Most comments received during the comment period were in favor of designation.

II. Basis for Determination

Among the factors considered by the Regional Administrator as part of the technical review process for designating an area under section 1424(e) were: (1) Whether the aquifer is the sole or principal source (more than 50%) of drinking water for the defined aquifer service area, and that the volume of water available from all alternate sources is insufficient to replace the petitioned aquifer; and (2) whether contamination of the aquifer would create a significant hazard to public health. On the basis of technical information available to EPA at this time, the Regional Administrator has made the following findings in favor of designating the 15 basin aquifer systems of northwest NJ as a sole source aquifer:

1. The 15 basin aquifer systems supply more than 50 percent of the drinking water to their defined aquifer service area, and therefore, are the sole or principal source of drinking water for the residents of that area.

2. There are no reasonable alternative sources capable of supplying a sufficient quantity of drinking water to the population served by the petitioned aquifer systems.

3. The basin aquifer systems of northwest New Jersey are considered to be highly vulnerable to contamination, due to the thinness of the soils over much of the area, the shallow depth to

ground water, and the fractured nature of the bedrock. Potential sources of contamination include transportation routes, septic systems, highway, rural and urban run-off, commercial and industrial facilities, and agricultural practices. If the basin aquifer systems were to become contaminated, it would create an significant hazard to public health.

III. Description of the 15 Basin Aquifer Systems, Designated Area and Project Review Area

The basin aquifer systems underlie all of Warren County, NJ; and portions of Sussex, Passaic, Morris, Mercer, Hunterdon, Somerset and Middlesex Counties, NJ, and Orange County, NY. The aquifer systems are delineated by drainage basin divides, streams which serve as discharge points, and the northern boundary of the Coastal Plain Physiographic Province where it crosses the Millstone River Basin. The basin aquifer systems encompass approximately 1,735 square miles.

The Delawanna Creek Basin Aquifer System underlies a portion of Warren County. The area includes parts of the Townships of Blairstown, Knowlton, Hope, and White, and the Town of Belvidere.

The Flat Brook Basin Aquifer System underlies portions of Sussex and Warren Counties. The area includes parts of the Townships of Wantage, Montague, Sandyston, Frankford, Stillwater, and Walpack.

The Lopatcong Basin Aquifer System underlies a portion of Warren County. The area includes parts of the Townships of Greenwich, Harmony, Lopatcong, Oxford, Pohatcong, and White, the Borough of Alpha, and the Towns of Belvidere and Phillipsburg.

The Millstone River Basin Aquifer System underlies portions of Morris, Sussex, Warren, and Hunterdon Counties. The area includes all of Princeton Township and Hopewell, Princeton, Millstone, and Rocky Hill Boroughs; and parts of the Townships of Bridgewater, East Amwell, Franklin, Hillsborough, Hopewell, Lawrence, Montgomery, North Brunswick, Plainsboro, South Brunswick, West Amwell, and West Windsor, and the Boroughs of Manville and Pennington.

The Musconetcong River Basin Aquifer System underlies portions of Morris, Sussex, Warren, and Hunterdon Counties. The area includes all of Bloomsbury, Stanhope, and Hopat-cong Boroughs and the Town of Hackettstown; and parts of the Townships of Alexandria, Allamuchy, Bethlehem, Byram, Franklin, Green, Greenwich, Holland, Independence, Jefferson, Lebanon, Mansfield, Mount Olive, Pohatcong, Roxbury, Sparta, and Washington, the Boroughs of Glen Gardner, Hampton, Mount Arlington, Netcong, and Washington.

The North Branch Raritan River Basin Aquifer System underlines portions of Hunterdon, Morris and Somerset Counties. The area includes all of Bedminster Township and Chester, Lebanon and Peapack-Gladstone Boroughs; and parts of the Townships of Bernards, Branchburg, Bridgewater, Chester, Clinton, Hillsborough, Lebanon Mendham, Mine Hill Randolph, Readington, Roxbury, Tewksbury, and Washington, the Boroughs of Bernardsville, Califon, Far Hills, Mendham, Mount Arlington, Raritan, and Somerville, and the Town of Clinton.

The Papakating Creek Basin Aquifer System underlies a portion of Sussex County. The area includes parts of the Township of Frankford, Lefayette, Montague, Sandyston, and Wantage, and the Borough of Sussex.

The Paulins Kill Basin Aquifer System underlies portions of Warren and Sussex Counties. The area includes all of Hampton Township and Branchville Borough; and parts of the Townships of Andover, Blairstown, Frankford, Fredon, Frelinghuysen, Hardwick, Hardyston, Knowlton, Lafayette, Pahaquarry, Sandyston, Sparta, Stillwater, and Walpack, and the Town of Newton.

The Pequest River Basin Aquifer System underlies portions of Warren and Sussex Counties. The area includes all of Liberty Township and Andover Borough; and parts of the Townships of Allamuchy, Andover, Blairstown, Byram, Fredon, Frelinghuysen, Green, Hope, Independence, Knowlton, Mansfield, Oxford, Sparta Washington, and White, and Towns of Belvidere and Newton.

The Pochuck Creek Basin Aquifer System underlies portions of Sussex and Passaic Counties, NJ, and Orange County, NY. The area includes all of the Village of Warwick, NY; and parts of the Townships of Hardyston, Vernon, and West Milford, NJ and the Townships of Warwick and Chester, NY.

The Pohatcong Creek Basin Aquifer System underlies a portion of Warren County. The area includes all of Washington Borough; and parts of the Townships of Franklin, Greenwich, Harmony, Independence, Lopatcong, Mansfield, Oxford, Pohatcong, Washington, and White, and the Borough of Alpha.

The South Branch Raritan River Basin Aquifer System underlies portions of Warren, Hunterdon and Somerset Counties. The area includes all of Flemington and High Bridge Boroughs; and parts of the Township of Alexandria, Bethlehem, Branchburg, Chester, Clinton, Delaware, East Amwell, Franklin, Hillsborough, Lebanon, Mount Olive, Raritan, Readington, Roxbury, Tewksbury, Union, Washington, and West Amwell, the Town of Clinton, and the Boroughs of Califon, Glen Gardner, Hampton, and Mount Arlington.

The Shimmers Brook Basin Aquifer System underlies portions of Sussex County, NJ and Orange County, NY. The area includes parts of the Townships of Montague, Sandyston, Walpack, and Wantage, NJ, and the Township of Greenville and the City of Port Jervis, NY.

The Van Campens Brook Basin Aquifer System underlies portions of Warren and Sussex Counties. The area includes parts of the Township of Blairstown, Hardwick, Knowlton, Pahaquarry and Walpack.

The Wallkill River Basin Aquifer System underlies portions of Sussex County, NJ and Orange County, NY. The area includes all of the Village of Unionville, NY; and parts of the Townships of Andover, Byram, Hardyston, Jefferson, Lafayette, Montague, Sparta, Vernon, and Wantage, and the Boroughs of Franklin, Hamburg, Ogdensburg, and Sussex, NJ, and the Townships of Greenville, Minisink, Warwick, Wawayanda, Mount Hope, and Wallkill, NY.

The aquifer service areas for the Lopatcong Creek, Millstone River, Musconetcong River, North Branch Raritan River, Papakating Creek, Pequest River, Pohatcong Creek, South Branch Raritan River, Shimmers Brook, and the Wallkill River Basin Aquifer Systems extend beyond their aquifer system boundaries. Ground water from these basin aquifer systems is used by purveyors to supply people outside the aquifer system boundary. The population of all 15 aquifer service areas combined is approximately 600,000 people.

The recharge area for the 15 basin aquifer systems is the entire designated area. The streamflow source zone is defined as the upstream area of losing streams which flow into the recharge area. Except for the Millstone River, no streams flow into the recharge areas. In addition, all measurements indicate streams in the designated area are gaining streams. Therefore, there are no streamflow source zones for any of the 15 basin aquifer systems.

Only contaminants introduced in the recharge areas have the potential to affect the basin aquifer systems.

Therefore, the project review area is defined to include the entire designated area for the 15 basin aquifer systems.

Maps delineating the designated area and lists of the municipalities within each basin aquifer system are available, and may be obtained by contacting the person listed previously.

IV. Information Utilized in Determination

The information utilized in this determination included petition and background documentation submitted by the NJDEP, various U.S. Geological Survey and New Jersey State reports submitted with the petition, information contained in EPA files, and written and verbal comments from the public. These materials are available to the public and may be inspected during normal business hours at the address listed previously.

V. Project Review

Publication of this determination requires that EPA review proposed projects with Federal financial assistance in order to ensure that such projects do not have the potential to contaminate the 15 basin aquifer systems through their recharge zones so as to create a significant hazard to public health. In many cases, these projects may also be analyzed in an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA), 42 U.S.C. 4332(2)(c). All EISs, as well as any other proposed Federal actions affecting an EPA program, are required by Federal law (under the so-called "NEPA/309" process) to be reviewed and commented upon by the EPA Administrator.

In order to streamline EPA review of the possible environmental impacts on a designated sole source aquifer, when an action is to be analyzed in an EIS, the two reviews will be consolidated and both authorities cited. The EPA review under §1424(e) will therefore be included in the EPA review of the EIS (under NEPA).

VI. Summary and Discussion of Public Comments

Most public comments received expressed strong support for the designation of the 16 basin aquifer systems for which NJDEP developed the necessary documentation. Of the eleven persons or groups who submitted comments on the petition, only the New York State Department of Environmental Conservation (NYSDEC) opposed designation. NYSDEC's comments were specific to the portions of the basin aquifer systems which extend into NY. The reasons given for opposition are that (1) the basin aquifer systems which extend into NY are not listed as Primary Water Supply Aquifers by the State, and that designating such areas as a SSA distorts the State priority system; and (2) ground water flow in the Wallkill River Basin Aquifer System is north, from NJ into NY, and that any activities within the Wallkill River Basin in NY will have no impact on ground water quality in NJ.

In response to the above, (1) the Federal SSA program, as administered by EPA, is based on criteria independent of any State ground water program; and (2) it is Agency policy to, whenever possible, designate SSAs based on hydrogeologic rather than political boundaries because contamination of any portion of an aquifer can affect the downgradient portions of that aquifer. All information reviewed indicates that the ground water divide in this area will correspond with the drainage basin divide. For this reason, the first prominent divide in the NY portion of the Wallkill River Drainage Basin was used to define the northern boundary of the Wallkill River Basin Aquifer System.

One person expressed concern that the Whippany River Basin Aquifer System portion of the petition area overlaps the peviously designated Buried Valley Sole Source Aquifer. Review of designation documentation by Agency personnel confirmed that an overlap exists between the two areas. Therefore, the area recommended for designation does not include the Whippany River Basin Aquifer System.

Another person expressed concern that SSA designation may impede local solid waste management efforts. However, SSA designation provides for review of ground water protection measures for only those projects which request Federal financial assistance. Since solid waste management at the local level is not federally funded, such efforts will not be subject to review under the SSA program.

Another commentor requested that EPA expand the proposed designated area for the Wallkill River Basin Aquifer System in Orange County, New York. Insufficient information was submitted with their request to justify an expansion. Therefore, rather than delay designation of an area with sufficient documentation, EPA will proceed with designation of the area as petitioned.

VII. Summary

Today's action affects the 15 basin aquifer systems of northwest NJ, located in Warren, Sussex, Passaic, Morris, Mercer, Hunterdon, Somerset and Middlesex Counties, NJ, and Orange County, NY. Projects with Federal financial assistance proposed for all of Warren County, NJ; and portions of Sussex, Passaic, Morris, Mercer, Hunterdon, Somerset and Middlesex Counties, NJ, and Orange County, NY, will be reviewed to ensure that necessary ground water protection measures are incorporated into them.

Dated: June 10, 1988.

Christopher J. Daggett,

Regional Administrator, Environmental Protection Agency, Region II.

[FR Doc. 88-14155 Filed 6-22-88; 8:45 am]

BILLING CODE 6560-50-M

FEDERAL COMMUNICATIONS COMMISSION

Applications for Consolidated Hearing; Ebenezer Broadcasting Group, Inc., et al.

1. The Commission has before it the following mutually exclusive applications for a new TV station:

Applicant, city and state	File No.	MM Docket No.
A. Ebenezer Broadcasting Group, Inc., Guayama, PR.	BPCT-870331QI	88-291
B. Ministerio Radial Cristo Viene, Inc., Guayama, PR.	BPET-870505KG	

2. Pursuant to section 309(e) of the Communications Act of 1934, as amended, the above applications have been designated for hearing in a consolidated proceeding upon the issues whose headings are set forth below. The text of each of these issues has been standardized and is set forth in its entirety under the corresponding headings at 51 FR 19347, May 29, 1986. The letter shown before each applicants' name, above, is used below to signify whether the issue in question applies to that particular applicant.

Issue Heading and Applicant(s)

Short-spacing, A, B
Contingent environmental, A, B
Comparative, A, B
Ultimate, A, B
(See appendix)

3. If there is any non-standardized issue(s) in this proceeding, the full text of the issue and the applicant(s) to which it applies are set forth in an Appendix to this notice. A copy of the complete HDO in this proceeding is available for inspection and copying during normal business hours in the FCC Dockets Branch (Room 230), 1919 M

REFERENCE NO. 12

Uncontrolled Hazardous Waste Site Ranking System

A Users Manual
(HW-10)

Originally Published in
the July 16, 1982, *Federal Register*

United States
Environmental Protection
Agency

1984

TABLE 2

PERMEABILITY OF GEOLOGIC MATERIALS*

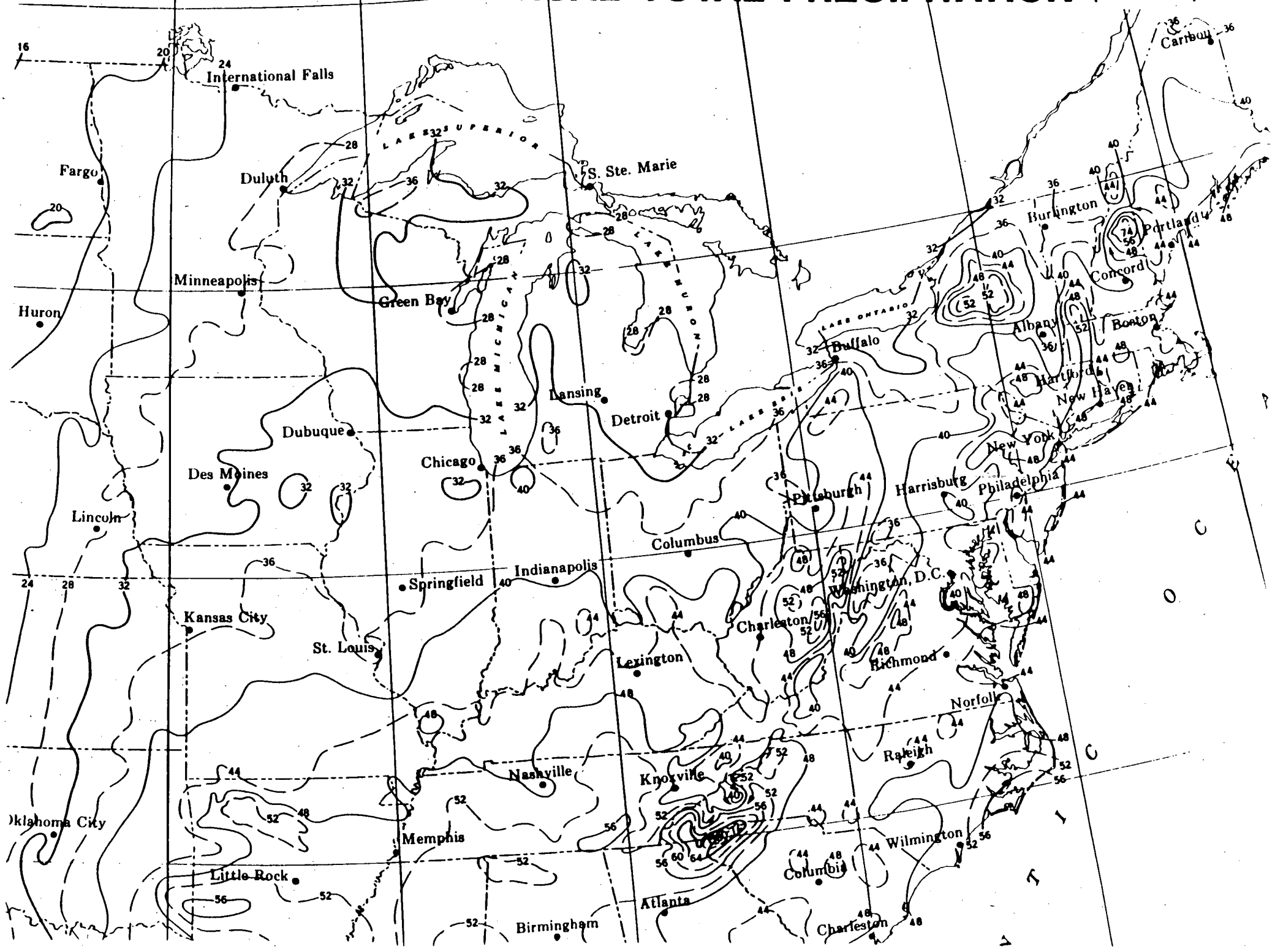
Type of Material	Approximate Range of Hydraulic Conductivity	Assigned Value
Clay, compact till, shale; unfractured metamorphic and igneous rocks	$<10^{-7}$ cm/sec	0
Silt, loess, silty clays, silty loams, clay loams; less permeable limestone, dolomites, and sandstone; moderately permeable till	$10^{-5} - 10^{-7}$ cm/sec	1
Fine sand and silty sand; sandy loams; loamy sands; moderately permeable limestone, dolomites, and sandstone (no karst); moderately fractured igneous and metamorphic rocks, some coarse till	$10^{-3} - 10^{-5}$ cm/sec	2
Gravel, sand; highly fractured igneous and metamorphic rocks; permeable basalt and lavas; karst limestone and dolomite	$>10^{-3}$ cm/sec	3

*Derived from:

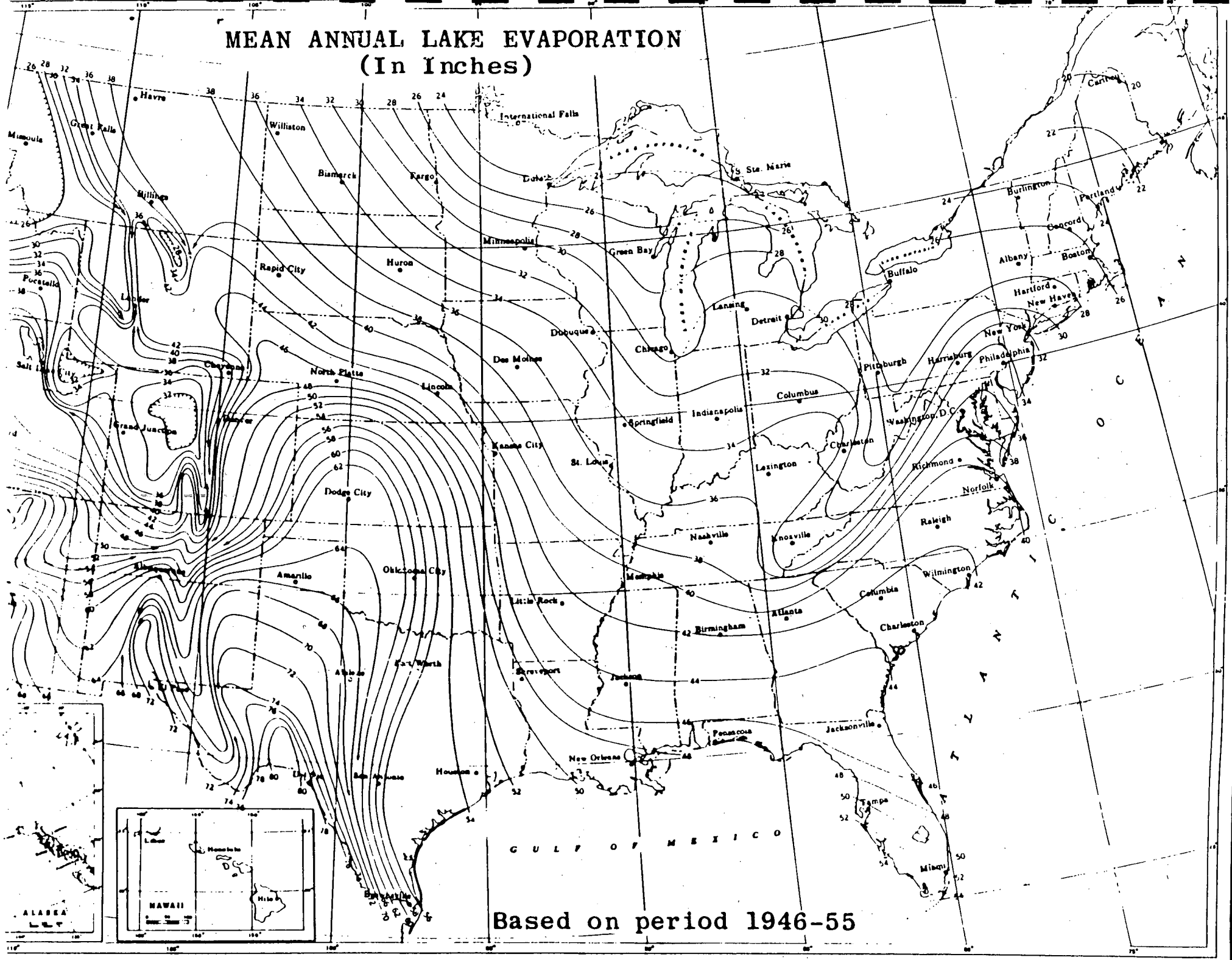
Davis, S. N., Porosity and Permeability of Natural Materials in Flow-Through Porous Media, R.J.M. DeWest ed., Academic Press, New York, 1969

Freeze, R.A. and J.A. Cherry, Groundwater, Prentice-Hall, Inc., New York, 1979

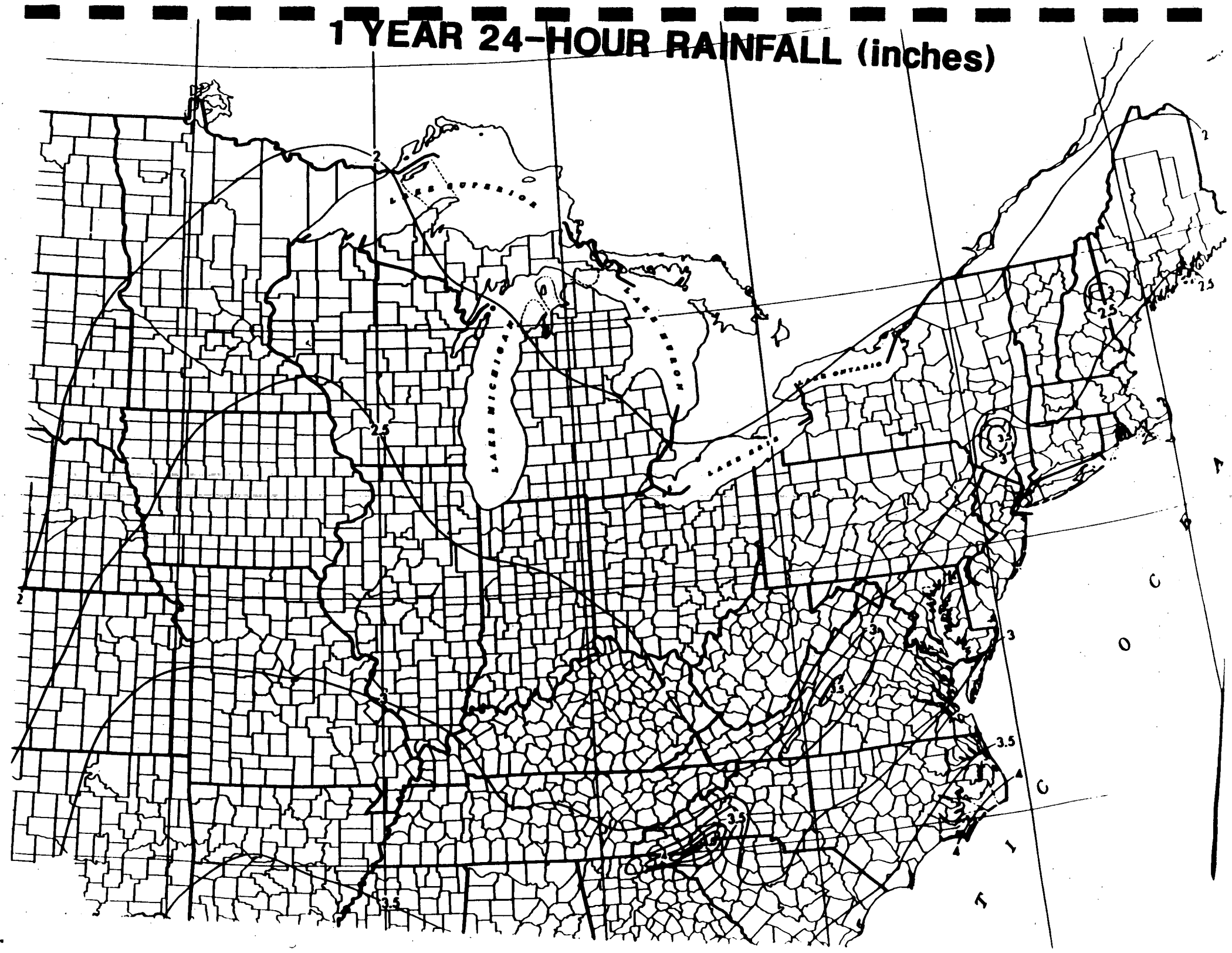
NORMAL ANNUAL TOTAL PRECIPITATION (Inches)



MEAN ANNUAL LAKE EVAPORATION
(In Inches)



1 YEAR 24-HOUR RAINFALL (inches)



REFERENCE NO. 13

United States Department of the Interior

GEOLOGICAL SURVEY

Water Resources Division
Mountain View Office Park
810 Bear Tavern Rd., Suite 206
W. Trenton, NJ 08628

February 21, 1986

Ms. Diane Trube
NUS Corporation
Raritan Plaza II
Fieldcrest Avenue
Edison, NJ 08837

Dear Ms. Trube:

Enclosed are retrievals from our Ground Water Site Inventory Data Base for 14 New Jersey counties as you requested. Together with the retrievals for seven (7) counties previously sent on January 14, 1986, this provides you with a complete copy of the data base for New Jersey with approximately 7,000 entries.

I trust that this information will be useful.

Sincerely,

F. L. Schaefer

F. L. Schaefer
Information Requests Specialist

Encl.

cc: T. V. Fusillo

FLS:nm

USGS - GWSI FILE

STORED COMPONENTS

Each of the components stored in the District File is described in this section. Most of the definitions are derived from Volume II of the WATSTORE User's Guide.

1. Unique Well Number - A six digit number of which the first two digits represent the county code and the last four digits are a consecutive number assigned to the well when the well is scheduled. The county codes and the counties they represent are:

COUNTY CODES

01 - ATLANTIC	23 - MIDDLESEX
03 - BERGEN	25 - MONMOUTH
05 - BURLINGTON	27 - MORRIS
07 - CAMDEN	29 - OCEAN
09 - CAPE MAY	31 - PASSAIC
11 - CUMBERLAND	33 - SALEM
13 - ESSEX	35 - SOMERSET
15 - GLOUCESTER	37 - SUSSEX
17 - HUDSON	39 - UNION
19 - HUNTERDON	41 - WARREN
21 - MERCER	

2. Site - ID - A 15-digit identification number assigned to the site used primarily as an internal control number within the WATSTORE computer file. Although the Site - ID is formed initially from the latitude and longitude of the site, the number is an identifier and not a locator.

3. Latitude - The best available value for the latitude of the site in degrees, minutes, and seconds.

itude - The best available value for the longitude of the site in degrees, minutes, and seconds.

5. Municipality - The name of the township in which the well is located.

6. Owner - The most current known owner of the well.

7. Local identifier - A name given to the well by the owner or U.S. Geological Survey to help distinguish between multiple wells of the same owner.

8. Date completed - The date the well was completed by the driller.

9. Use of site - A code indicating the principal use of the site. The codes and their meanings are:

A - anode
C - standby emergency supply
D - drain
E - geothermal
G - seismic
H - heat reservoir
M - mine
O - observation
P - oil or gas well
R - recharge
S - repressurize
T - test
U - unused
W - withdrawal of water
X - waste disposal
Z - destroyed

Use of water - A code indicating the principal use of water from the site. The codes and their meanings are:

A- air conditioning	I - irrigation	R - recreation
B- bottling	J - industrial (cooling)	S - stock
C- commercial	K - mining	T - institution
D- dewater	M - medicinal	U - unused
E- power	N - industrial	Y - desalination
F- fire	P - public supply	Z - other (explain in remarks)
H- domestic	Q - aquaculture	

11. Altitude of land surface (feet) - The altitudes of the land surface at the site, in feet above land surface datum (NVGD of 1929).

12. Water level (feet) - The depth of the water in the well from the land surface at the time the well was constructed.

13. Date water level measured - The date on which the given water level was measured which is usually at the time the well was constructed.

14. Depth of well (feet) - The depth of the finished well in feet below land surface datum. This is not always equal to the bottom of the last opening because the well may have a plug at the bottom.

15. Production level (feet) - The water level in feet below land surface while the well was discharging usually taken during the initial pump test.

6. Discharge - The discharge from the site in gallons per minute at the time of the original pump test.

7. Principal aquifer - A code representing the principal source of water in the well. The codes and their meanings are found in Appendix A.

18. Data reliability - Primarily indicates if the well has been field checked by the New Jersey District of the U.S. Geological Survey. The codes and their meanings are:

C - the data have been field checked by the reporting agency.

U - the data have not been field checked by the reporting agency, but the reporting agency considers the data reliable.

19. Altitude measurement method - A code indicating the method used to determine the altitude of the site. The codes and their meanings are:

A - altimeter

L - level or other surveying method

M - interpolated from topographic map

Failure to select one of these values implies that the method is unknown.

20. Length of screen (feet) - The calculated difference between the bottom and top of the open section.

21. Multiple opening flag - In the instances where there are multiple screens or blanks within the screened interval the value calculated is flagged by a *. Thus, the length of screen can be greater than the top to bottom if the screens are telescoped or less if there are blanks.

22. Depth to first opening (feet) - The depth to the top of the first open section of the screen or open hole in feet below land surface.

23. Bottom last opening (feet) - The depth to the bottom of the last open section of the screen or open hole in feet below land surface.

24. Minimum screen diameter (inches) - The smallest diameter of the open section that can be filled with water.

25. End depth drillers log (feet) - The deepest point below land surface that accompanies the drillers lithologic log of the well.

26. Hydrologic unit - A cataloging unit representing the hydrologic unit in which the site is located. The hydrologic units and their boundaries are given in the map provided.

Driller - The name of the company or individual that drilled and finished the well.

8. Minimum casing diameter (inches) - The diameter of the narrowest casing segment of the well.

9. Owner date - The most current date of ownership associated with the well.

10. Site type - A code representing the type of well. The codes and their meanings are:

C - collector or Ranney type well.

D - drain dug to intercept the water table or potentiometric surface to either lower the ground-water level or serve as a water supply.

E - excavation.

H - sinkhole.

I - interconnected wells, also called connector or drainage wells; that is, a well interconnected via an underground lateral.

M - multiple wells. Use only for well field consisting of a group of wells that are pumped through a single header and for which little or no data about the individual wells are available.

O - outcrop.

P - pond dug to intercept the water table or potentiometric surface and serve as a water supply.

S - spring (used only on spring schedule.

T - tunnel, shaft, or mine from which ground water is obtained.

W - well, for single wells other than wells of the collector or Ranney.

X - test hole, not completed as a well.

31. Latitude - longitude accuracy - Indicates the accuracy to which the lat-long is measured. When it is measured from a U.S. Geological Survey topographic map the code T for ± 10 seconds is generally used. When field checked the code used is F ± 5 seconds. The codes and meanings are:

S - the measurement is accurate to ± 1 second

F - the measurement is accurate to ± 5 seconds

T - the measurement is accurate to ± 10 seconds

M - the measurement is accurate to ± 1 minute

No value indicates that the accuracy is unknown and is, therefore, assumed to be beyond one minute.

32. Accuracy of altitude - The accuracy of altitudes interpolated from the contours on topographic maps is ± one-half the contour interval.

33. Current use of water - The codes from use of water are used, however, this code represents the current status of the well. The primary use may have changed or the well may have been destroyed.

34. Measuring point - point above land surface from which water level measurement is taken.

35. Permit number - The State Department of Environmental Protection, Division of Water Resources (NJDEP/DWR) assigns a 6-7 digit code with the first 2 digits representing the State Atlas Map on which the well is located and the remaining 4-5 digits are assigned consecutively.

36. Grid number - The 7 digit code assigned by the NJDEP/DWR representing the well location on the State Atlas Maps.

37. Water Supply number - Number assigned by the NJDEP/DWR Water Policy and Supply Council, to the diversion rights of a well.

38. Depth to bedrock - Depth in feet below land surface datum where a rock formation is first encountered.

39. Bedrock material (lithology) - The description and classification of bedrock. The codes and their meanings are given in Appendix C.

40. Standard industrial use code - A standard four-digit code representing the use of the water. The codes and their meanings are given in Appendix B.

f opening - The code indicating type of open section.

es and their meanings are:

F- fractured rock

L- louvered or shutter-type

M mesh screen

P perforated, porous, or slotted casing

R wire-wound screen

S - screen, type not known

T - sand point

W - walled or shored

X - open hole

Z - other (explain in remarks)

This field is mandatory. Information about the openings will not be stored if this field is blank.

42. Type of opening material (C86/Screen-Material) - The code indicating the type of material from which the screen or other open section is made. The codes and their meanings are:

B - brass or bronze

C - concrete

G - galvanized iron

I - wrought iron

M - other metal

P - PVC, fiberglass, or other plastic

R - stainless steel

S - steel

T - tile

Z - other (explain in remarks)

43. Type of lift - The type of lift or pump used to bring water to the surface. The codes and meanings are:

A - air list

B - bucket

C - centrifugal pump

J - jet pump

P - piston pump

R - rotary pump

S - submergible pump

T - turbine pump

U - unknown

Z - other (explain in remarks)

24. Municipolity code - A list of municipalities and codes published by the New Jersey Department of Transportation. The code are assigned 2-digit numbers to the alphabetical listing of municipolities within each county. (Appendix D.)

Values stored in the GWSIDB.DAT file can be used to compute other components using DATATRIEVE. These components do not occupy space in the GWSIDB.DAT file and are derived only when you use them in a DATATRIEVE statement.

1. Altitude of water level (feet) - A value calculated by the computer by subtracting the water level from the altitude of the land surface.

2. Drawdown (feet) - The difference between the production level and the water level.

3. Specific capacity - The discharge expressed as a rate of yield per unit drawdown reported in units of gallons per minute per feet. If the value is followed by a μ, the date of the water level measurement is different than the date of construction by two years or greater or one of the dates is blank. This gives an indication of the reliability of the specific capacity measurement to the initial conditions at the time the well was drilled.

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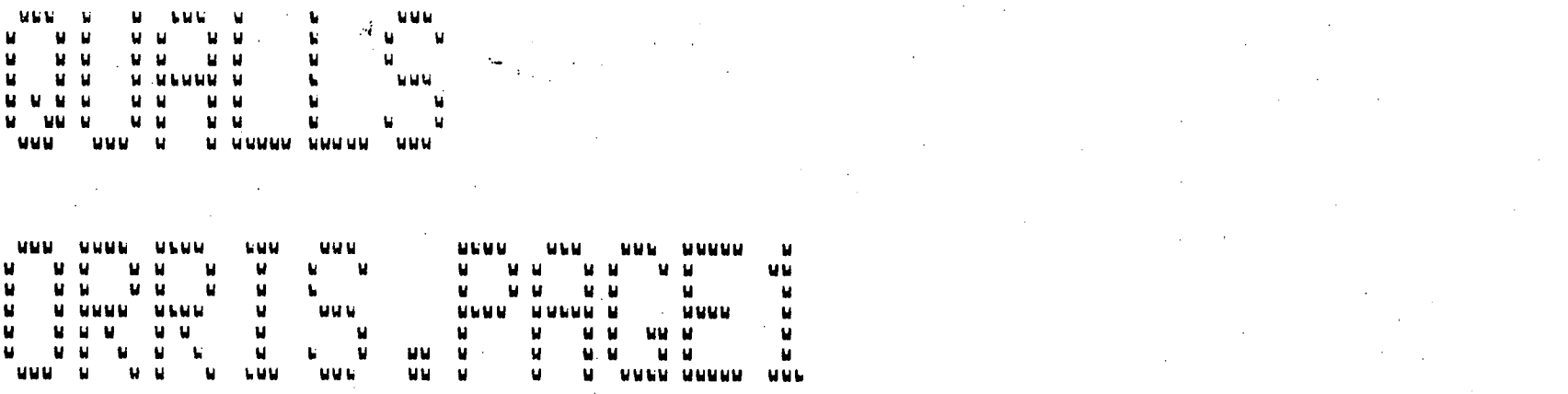

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U. S. GEOLOGICAL SURVEY TRENTON, NEW JERSEY

SELECTED INFORMATION OF WELLS FROM THE GROUND WATER SITE INVENTORY DATABASE
MORRIS COUNTY

USGS UNIQUE ID	SITE ID	LATITU	LONGTU	MUNICIPALITY	SITE OWNER	LOCAL IDENTIFIER	DATE COMPLETED	USE OF SITE	CRIG WATER USE	CURR WATER USE	LAT LON ACC
270137	405408074303101	405408	743031	ROCKAWAY BORO	ROCKAWAY BORO WD	RBWD 1	09/05/1922	W	P	P	S
270138	405342074305701	405342	743057	ROCKAWAY BORO	ROCKAWAY BORO WD	RBWD 3	02/20/1943	W	P	P	S
270139	405405074303701	405405	743037	ROCKAWAY BORO	ROCKAWAY BORO WD	RBWD 4	09/10/1956	W	P	P	S
270140	404705074243101	404705	742431	FLORHAM PARK BORO	FLORHAM PARK WD	FPBWD 1	06/02/1941	W	P	P	F
270141	404723074242401	404723	742424	FLORHAM PARK BORO	FLORHAM PARK WD	FPBWD 2	08/00/1953	W	P	P	F
270142	404708074240801	404708	742408	FLORHAM PARK BORO	FLORHAM PARK WD	FPBWD 3	11/00/1964	W	P	P	F
270143	404709074243701	404709	742437	FLORHAM PARK BORO	FLORHAM PARK WD	FPWD 4	07/29/1980	W	P	P	F
270144	404656074223401	404656	742234	FLORHAM PARK BORO	FLORHAM PARK WD	FPBWD TW 1	07/24/1952	T	P	P	F
270145	404755074240801	404755	742408	FLORHAM PARK BORO	WILBUR B DRIVER CO	1	10/19/1962	W	N	N	F
270146	404721074265701	404720	742655	MORRIS TWP	ALLIED CHEMICAL CO	4	10/23/1969	W	N	N	F
270147	404856074233901	404856	742325	EAST HANOVER TWP	EAST HANOVER TWP WD	EHTWD 2	03/15/1967	W	P	P	S
270148	405009074211701	405009	742117	EAST HANOVER TWP	EAST HANOVER TWP WD	EHTWD 5	08/14/1972	W	P	P	S
270149	404854074205301	404854	742053	EAST HANOVER TWP	EAST HANOVER TWP WD	EHTWD 3	11/11/1960	W	P	U	T
270150	404349074251601	404349	742516	CHATHAM TWP	US GEOL SURVEY	GS TH 4	08/18/1981	O	U	U	S
270151	404417074261601	404417	742616	CHATHAM TWP	US GEOL SURVEY	GS TH 5	08/25/1981	O	U	U	S
270152	404450074245901	404450	742459	MADISON BORO	US GEOL SURVEY	TM TH 1	08/22/1981	O	U	U	S
270153	404707074283901	404707	742839	MORRISTOWN TOWN	SE MORRIS CO MUA	LIDGERWOOD 5	11/07/1967	W	P	P	F
270154	405020074273901	405020	742739	PARSIP-TROY HILLS	SE MORRIS CO MUA	LITTLETON 1	00/00/1927	W	P	P	S
270155	405018074274501	405018	742745	PARSIP-TROY HILLS	SE MORRIS CO MUA	LITTLETON 2	12/00/1939	W	P	P	S
270156	404733074255101	404733	742551	HANOVER TWP	SE MORRIS CO MUA	NORMANDY	12/00/1946	W	P	P	F
270157	404709074290201	404709	742902	MORRISTOWN TOWN	SE MORRIS CO MUA	OVERLOOK	05/03/1966	W	P	P	F
270158	404545074301801	404545	743018	HARDING TWP	SE MORRIS CO MUA	SAND SPRINGS	09/26/1942	W	P	P	S
270159	404941074300601	404941	743006	MORRIS TWP	SE MORRIS CO MUA	SHONGUN WELL	00/00/1968	W	P	P	S
270160	404952074263201	404952	742632	HANOVER TWP	SE MORRIS CO MUA	TODD	11/04/1954	W	P	P	S
270161	404709074275201	404709	742752	MORRISTOWN TOWN	SE MORRIS CO MUA	TURNBULL	12/16/1965	W	P	P	S
270162	404955074264101	404955	742641	HANOVER TWP	SE MORRIS CO MUA	WING WELL	07/30/1948	W	P	P	S
270163	405211074254301	405211	742543	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 1-OBS	11/02/1931	W	P	U	S
270164	405207074254601	405207	742546	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 1A	09/00/1958	W	P	P	F
270165	405219074255601	405219	742556	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 2	00/00/1937	W	P	P	S
270166	405220074235801	405220	742358	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 3	11/00/1944	W	P	P	F
270167	405207074251301	405207	742513	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 4	03/00/1951	W	P	P	S
270168	405206074251101	405206	742511	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 4A	05/00/1958	W	P	P	S
270169	405130074283501	405130	742835	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 5-1	07/25/1953	W	P	U	F
270170	405134074283401	405134	742834	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 5-2	03/24/1954	W	P	U	F
270171	405137074283301	405137	742833	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 5-3	04/16/1954	W	P	U	F
270172	405139074283101	405139	742831	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 5-4	04/10/1954	W	P	U	F
270173	405139074210901	405139	742109	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 6	00/00/1956	W	P	P	F
270174	405139074210902	405139	742109	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD TW 6	10/00/1954	T	L	U	F
270175	405102074250201	405102	742502	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 7	07/22/1958	W	P	P	F
270176	405037074233901	405037	742339	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 8-1	07/00/1963	W	P	P	F
270177	405032074234301	405032	742343	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 8-2	07/00/1963	W	P	P	F
270178	405035074233701	405035	742337	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 8-3	07/00/1963	W	P	P	F
270179	405211074260701	405211	742607	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 9	09/30/1964	W	P	P	F

Depth to Aquifer

SELECTED INFORMATION OF WELLS FROM THE GROUND WATER SITE INVENTORY DATABASE
MORRIS COUNTY

Nearest well →

USGS UNIQUE ID	SITE ID	LATITU	LONGTU	MUNICIPALITY	SITE OWNER	LOCAL IDENTIFIER	DATE COMPLETED	USE OF SITE	ORIG WATER USE	CURR WATER USE	LAT LON ACC
270180	405212074261701	405212	742617	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 10	09/30/1964	W	P	P	S
270181	405059074231201	405059	742312	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 11	03/05/1965	W	P	P	F
270182	405111074231001	405111	742310	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 13	00/00/1966	W	P	P	F
270183	405048074263501	405048	742635	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 14	00/00/1969	W	P	P	F
270184	405153074231201	405153	742312	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 15	00/00/1970	W	P	P	F
270185	405031074263501	405031	742635	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD 19	09/01/1980	W	F	P	F
270186	405135074243401	405135	742434	PARSIP-TROY HILLS	PARSIP-TROY HILLS WD	PTHWD TW 20	/ /	W	U	U	F
270187	405448074300203	405448	743002	ROCKAWAY TWP	ROCKAWAY TWP WD	RTWD 4	/ /	W	F	P	S
270188	405335074265001	405335	742650	MOUNTAIN LAKES BORO	MOUNTAIN LAKES WD	TOWER HILL 4	01/01/1922	W	P	P	F
270189	405413074274101	405413	742741	DENVILLE TWP	MOUNTAIN LAKES WD	MLWD 4	08/25/1947	C	P	P	F
270190	405408074274301	405408	742743	DENVILLE TWP	MOUNTAIN LAKES WD	MLWD 3	07/25/1947	W	P	P	F
270191	405458074252801	405458	742528	MOUNTAIN LAKES BORO	MOUNTAIN LAKES WD	MLWD 5	01/08/1969	W	P	P	F
270192	405136074200901	405136	742009	MONTVILLE TWP	O'DOWD, ALBERT	ALBERT O'DOWD	12/01/1950	W	H	H	F
270193	405358074222101	405358	742221	MONTVILLE TWP	MONTVILLE TWP MUA	MUNICIPAL BLDG	07/10/1962	W	H	H	F
270194	405324074211601	405324	742116	MONTVILLE TWP	MONTVILLE TWP MUA	MTMUA 2	01/01/1965	W	P	P	F
270195	405229074211101	405229	742111	MONTVILLE TWP	MONTVILLE TWP MUA	MTMUA 1	12/01/1957	W	P	P	F
270196	405320074211201	405320	742112	MONTVILLE TWP	MONTVILLE TWP MUA	MTMUA 3	07/13/1966	W	P	P	F
270197	405521074230701	405521	742307	MONTVILLE TWP	MONTVILLE TWP MUA	MTMUA 5	01/01/1965	W	P	P	F
270198	405615074203502	405615	742035	MONTVILLE TWP	MONTVILLE TWP MUA	INDIAN LANE 2	11/12/1974	W	P	P	F
270199	405420074240701	405420	742407	BOONTON TWP	DF DREW CO	3	08/23/1950	W	N	N	T
270200	404708074240802	404708	742408	FLORHAM PARK BORO	FLORHAM PARK WD	FPWD TW 1	08/06/1952	T	U	U	T
270201	404723074242402	404723	742424	FLORHAM PARK BORO	FLORHAM PARK WD	FPWD TW 2	10/20/1952	T	U	U	T
270202	404705074243102	404705	742431	FLORHAM PARK BORO	FLORHAM PARK WD	ELM ST OBS	01/01/1940	O	U	U	F
270203	404512074240301	404512	742403	MADISON BORO	MADISON BORO WD	MBWD 10	01/01/1929	W	P	U	F
270204	404512074240302	404512	742403	MADISON BORO	MADISON BORO WD	MBWD 11	01/01/1929	W	P	U	F
270205	404512074240303	404512	742403	MADISON BORO	MADSION BORO WD	MBWD 12	01/01/1929	W	P	U	F
270206	405455074181001	405455	741810	LINCOLN PARK BORO	LINCOLN PARK WD	LPWD T-2-A	02/08/1965	T	U	U	T
270207	405350074163001	405350	741630	LINCOLN PARK BORO	LINCOLN PARK WD	LPWD T-3-A	03/13/1965	T	U	U	T
270208	405630074180001	405630	741800	LINCOLN PARK BORO	LINCOLN PARK WD	LPWD T-4-A	04/01/1965	T	U	U	T
270209	404700074270001	404700	742700	MORRIS TWP	JERS CENTRAL PL	PUNCH BOWL RD	07/25/1964	W	N	N	T
270210	404804074280401	404804	742804	MORRISTOWN TOWN	JERS CENTRAL PL	RIDGEDALE AVE	03/10/1969	W	N	N	F
270211	404905074230001	404905	742300	EAST HANOVER TWP	JERS CENTRAL PL	JCPL 1	01/01/1926	W	N	N	T
270212	404900074224701	404900	742247	EAST HANOVER TWP	JERS CENTRAL PL	OBS 1	04/13/1951	O	U	U	T
270213	404721074263701	404721	742637	MORRIS TWP	ALLIED CHEMICAL CO	1	05/04/1955	W	N	N	F
270214	404729074260801	404729	742608	MORRIS TWP	ALLIED CHEMICAL CO	2	05/17/1960	W	N	N	F
270215	404737074264101	404737	742641	MORRIS TWP	ALLIED CHEMICAL CO	OBS 5	03/01/1977	O	U	U	F
270216	404729074261801	404729	742618	MORRIS TWP	ALLIED CHEMICAL CO	OBS 7	03/02/1977	O	U	U	F
270217	404730074261301	404730	742613	MORRIS TWP	ALLIED CHEMICAL CO	OBS 9	04/01/1977	O	U	U	F
270218	404736074262301	404736	742623	MORRIS TWP	ALLIED CHEMICAL CO	OBS 11	01/28/1980	O	U	U	F
270219	404726074260701	404726	742607	MORRIS TWP	ALLIED CHEMICAL CO	OBS 12	01/01/1980	O	U	U	F
270220	404733074255102	404733	742551	HANOVER TWP	SE MORRIS CO MUA	NORMANDY TW 1	01/01/1946	T	U	U	F
270221	405038074283301	405038	742833	MORRIS PLAINS BORO	WARNER-LAMBERT CO	BEYERS WELL	/ /	T	U	U	F
270222	405030074283701	405030	742837	MORRIS PLAINS BORO	WARNER-LAMBERT CO	PAT PATTERSON	/ /	T	U	U	F

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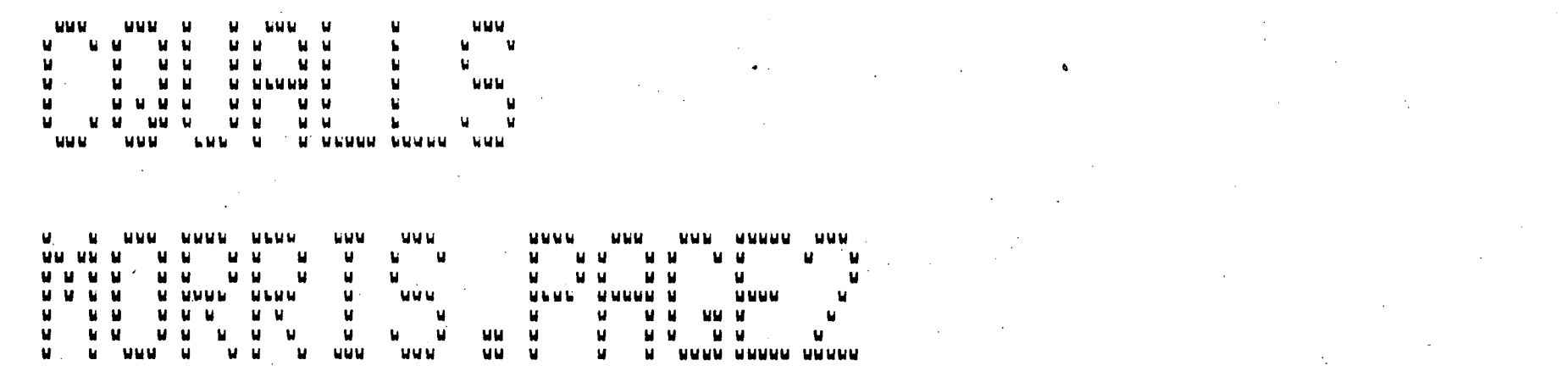

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Started: 86-01-13.14:49:48.Mon on: PR0 by: BIG

U. S. GEOLOGICAL SURVEY TRENTON, NEW JERSEY

SELECTED INFORMATION OF WELLS IN THE GROUND WATER SITE INVENTORY DATABASE
MORRIS COUNTY

USGS UNIQUE ID	ALTITUD	METH ALT MEAS	ALTI-TUDE ACC	WATER LEVEL	DATE LEVEL MEASURED	PRODU-TION LEVEL	DISCHARG	DEPTH FIRST OPENING	BOTTOM LAST OPENING	MIN OPEN DIA	OPEN-ING LENGT	TYPE OPEN -ING	TYPE OPEN MAT	BEDROCK DEPTH	BEDROCK MATERIAL	DEPTH DRILLER LOG
270137	520.00	M	10.00	4.00	/ /	30.00	346.00	39.00	48.67	24.0	9.7	S		0.00		49.00
270138	560.00	M	10.00	2.50	/ /	93.00	800.00	100.00	140.00	12.0	40.0	L		0.00		140.00
270139	520.00	M	10.00	9.00	/ /	65.00	351.00	69.00	84.00	12.0	15.0	S		0.00		85.17
270140	190.00	M	10.00	4.00	/ /	0.00	360.00	70.00	82.00	12.0	12.0	S		0.00		85.00
270141	190.00	M	10.00	0.00	/ /	0.00	1040.00	80.00	110.00	16.0	30.0	S		0.00		0.00
270142	190.00	M	10.00	7.00	/ /	46.00	735.00	67.00	103.00	22.0	36.0	S	C	0.00		103.00
270143	210.00	M	10.00	47.00	/ /	75.00	1395.00	89.00	139.00	14.0	50.0	S		0.00		140.00
270144	190.00	M	10.00	59.00	/ /	65.00	80.00	118.00	128.00	6.0	10.0	S		0.00		128.00
270145	190.00	M	10.00	1.00	/ /	30.00	1360.00	72.00	102.00	12.0	30.0	P	R	0.00		108.00
270146	380.00	M	10.00	113.00	/ /	167.00	329.00	185.00	203.00	8.0	18.0	P	R	228.00	SHLE	253.00
270147	190.00	M	10.00	12.00	/ /	50.00	1500.00	85.00	115.00	12.0	30.0	S	R	125.00	SHLE	125.00
270148	190.00	M	10.00	0.00	/ /	0.00	0.00	65.30	84.30	12.0	19.0	P	R	116.00		119.00
270149	190.00	M	10.00	15.00	/ /	150.00	70.00	139.08	270.00	0.0	130.9	X		131.00	SNDS	0.00
270150	250.00	A	5.00	0.00	/ /	0.00	0.00	110.00	112.50	1.3	2.5	T	G	136.00	SHLE	137.50
270151	250.00	M	10.00	0.00	/ /	0.00	0.00	90.00	92.50	1.3	2.5	T	G	0.00		0.00
270152	360.00	M	10.00	0.00	/ /	0.00	0.00	170.00	172.50	1.3	2.5	T	G	213.00	SHLE	213.00
270153	300.00	M	10.00	40.00	/ /	150.00	800.00	67.83	265.00	0.0	197.2	X		46.00	SNDS	265.00
270154	320.00	M	10.00	1.00	/ /	40.00	600.00	60.00	75.00	24.0	15.0	P	C	0.00		0.00
270155	330.00	M	10.00	1.00	/ /	40.00	600.00	60.00	75.00	24.0	15.0	P	C	0.00		0.00
270156	210.00	M	10.00	0.00	/ /	0.00	0.00	42.50	75.00	17.0	32.5	P	C	70.00	SHLE	79.42
270157	300.00	M	10.00	5.00	/ /	108.00	275.00	86.00	442.00	0.0	356.0	X		57.00	SHLE	442.00
270158	300.00	M	10.00	3.50	/ /	52.00	650.00	36.00	94.00	0.0	58.0	X		36.00	SHLE	94.00
270159	410.00	M	10.00	0.00	/ /	0.00	0.00	0.00	0.00	0.0	0.0			0.00		0.00
270160	280.00	M	10.00	22.00	/ /	50.00	1550.00	94.00	144.00	17.0	50.0	S		144.00		144.00
270161	300.00	L	5.00	48.50	/ /	200.00	400.00	124.00	496.00	0.0	372.0	X		120.00	SHLE	496.00
270162	280.00	M	10.00	3.00	/ /	11.00	1000.00	88.00	118.00	17.0	30.0	P	C	0.00		133.00
270163	300.00	M	10.00	16.00	/ /	36.00	745.00	106.75	136.75	16.0	30.0	L		0.00		150.83
270164	300.00	M	10.00	25.25	/ /	62.00	600.00	102.00	138.00	8.0	36.0	P		0.00		144.00
270165	310.00	M	10.00	9.00	/ /	0.00	600.00	57.00	145.00	16.0	88.0	S		0.00		190.00
270166	300.00	M	10.00	30.00	/ /	49.00	600.00	49.00	75.00	16.0	26.0	S		93.00	SHLE	98.00
270167	300.00	M	10.00	13.00	/ /	72.00	500.00	52.00	79.00	16.0	27.0	S		0.00		143.00
270168	300.00	M	10.00	0.00	/ /	32.00	790.00	120.00	150.00	10.0	30.0	P		0.00		150.00
270169	480.00	M	10.00	118.00	/ /	136.00	150.00	52.00	150.00	0.0	98.0	X		43.00		150.00
270170	520.00	M	10.00	7.00	/ /	98.00	263.00	38.00	195.00	0.0	157.0	X		35.00		195.00
270171	540.00	M	10.00	8.00	/ /	65.00	402.00	39.75	150.00	0.0	110.3	X		35.00		150.00
270172	560.00	M	10.00	10.00	05/08/1954	105.00	195.00	32.33	150.00	0.0	117.7	X		30.00		150.00
270173	180.00	M	10.00	0.00	/ /	0.00	350.00	54.00	90.00	17.0	36.0	S	C	90.00	SHLE	90.00
270174	180.00		10.00	0.00	/ /	0.00	0.00	75.00	86.00	0.0	11.0	X		86.00		86.00
270175	280.00	M	10.00	7.00	/ /	51.00	715.00	55.25	65.00	16.0	9.8	R		0.00		66.00
270176	180.00	M	10.00	0.00	/ /	0.00	0.00	40.00	60.00	12.0	20.0	S		65.00	SHLE	65.00
270177	180.00	M	10.00	0.00	/ /	0.00	0.00	40.00	60.00	12.0	20.0	S		65.00	SHLE	65.00
270178	180.00	M	10.00	0.00	/ /	0.00	0.00	40.00	70.00	12.0	30.0	S		70.00	SHLE	70.00
270179	280.00	M	10.00	30.00	/ /	0.00	750.00	60.00	80.00	16.0	20.0	S		0.00		80.00

Depth to Aquifer →

SELECTED INFORMATION OF WELLS IN THE GROUND WATER SITE INVENTORY DATABASE
MORRIS COUNTY

USGS UNIQUE ID	ALTITUD	METH ALT MEAS	ALTI TUDE ACC	WATER LEVEL	DATE LEVEL MEASURED	PRODU-TION LEVEL	DISCHARG	DEPTH FIRST OPENING	BOTTOM LAST OPENING	MIN OPEN DIA	OPEN-ING LENGT	TYPE OPEN -ING	TYPE OPEN MAT	BEDROCK DEPTH	BEDROCK MATERIAL	DEPTH DRILLER LOG
nearest well																
270180	280.00	M	10.00	30.00	/ /	0.00	500.00	119.00	129.00	12.0	10.0	S		0.00		155.00
270181	180.00	M	10.00	-10.00	/ /	0.00	500.00	55.00	80.00	14.0	25.0	S		80.00	SHLE	80.00
270182	180.00	M	10.00	0.00	/ /	0.00	835.00	30.00	47.00	0.0	17.0	S		0.00		47.00
270183	290.00	M	10.00	15.00	/ /	0.00	920.00	68.00	86.42	0.0	18.4	S		112.00	SHLE	114.00
270184	210.00	M	10.00	36.00	/ /	0.00	275.00	72.00	87.00	0.0	15.0	S		90.00	SHLE	92.00
270185	280.00	M	10.00	0.00	/ /	0.00	0.00	104.00	134.00	14.0	30.0	P		0.00		0.00
270186	280.00	M	10.00	0.00	/ /	0.00	0.00	75.00	100.00	0.0	25.0	S		0.00		103.00
270187	510.00	M	10.00	12.00	/ /	117.00	500.00	110.00	150.00	12.0	40.0	P	B	0.00		153.00
270188	620.00	M	10.00	0.00	/ /	0.00	250.00	80.00	462.00	0.0	382.0	X		0.00		0.00
270189	500.00	M	10.00	15.00	/ /	39.00	560.00	32.00	64.00	17.0	32.0	S	C	0.00		64.00
270190	500.00	M	10.00	11.00	/ /	31.25	600.00	32.00	64.00	17.0	32.0	S	C	0.00		66.00
270191	520.00	M	10.00	124.00	/ /	0.00	0.00	235.00	332.00	8.0	97.0	S		0.00		0.00
270192	190.00	M	10.00	12.00	/ /	68.00	25.00	0.00	0.00	0.0	0.0			0.00		0.00
270193	190.00	M	10.00	4.00	/ /	95.00	20.00	91.00	205.00	0.0	114.0	X		87.00	SHLE	0.00
270194	290.00	M	10.00	0.00	/ /	0.00	75.00	0.00	0.00	0.0	0.0			0.00		0.00
270195	190.00	M	10.00	0.00	/ /	150.00	100.00	60.00	290.00	0.0	230.0	X		0.00	BSLT	0.00
270196	300.00	M	10.00	180.00	/ /	225.00	106.00	19.00	293.00	0.0	274.0	X		0.00	BSLT	293.00
270197	400.00	M	10.00	25.00	/ /	98.00	42.00	36.00	112.00	0.0	76.0	X		36.00	LMSN	0.00
270198	190.00		0.00	3.92	/ /	145.58	771.00	202.17	243.00	12.0	40.8	S	R	0.00		243.00
270199	400.00	M	10.00	31.50	/ /	200.00	13.00	61.83	416.00	0.0	354.2	X		47.00	GNSS	416.00
270200	190.00	M	10.00	10.00	/ /	61.00	75.00	84.00	92.00	5.0	8.0	S		120.00	SHLE	128.00
270201	190.00	M	10.00	33.00	/ /	33.00	215.00	94.25	104.00	5.0	9.8	S		120.00	SHLE	120.00
270202	190.00	M	10.00	0.00	/ /	0.00	160.00	53.00	68.00	8.0	15.0	S		0.00		78.00
270203	186.00		0.00	13.00	/ /	33.00	979.00	96.00	126.00	10.0	30.0	S		0.00		0.00
270204	186.00		0.00	11.00	/ /	35.00	1000.00	99.00	129.00	10.0	30.0	S		0.00		0.00
270205	192.00	M	10.00	11.00	/ /	43.00	979.00	110.00	140.00	10.0	30.0	S		0.00		0.00
270206	180.00	M	10.00	5.00	/ /	100.00	125.00	32.00	430.00	0.0	398.0	X		34.00	SHLE	430.00
270207	170.00	M	10.00	3.00	/ /	0.00	0.00	57.00	60.00	0.0	3.0	X		57.00	SHLE	60.00
270208	170.00	M	10.00	5.00	/ /	0.00	0.00	226.00	400.00	0.0	174.0	X		226.00	SHLE	400.00
270209	380.00	M	10.00	115.00	/ /	238.00	170.00	204.00	600.00	0.0	396.0	X		202.00	SHLE	600.00
270210	300.00	M	10.00	42.00	/ /	44.00	15.00	131.00	141.00	6.0	10.0	S	R	0.00		142.00
270211	196.00	M	10.00	0.00	/ /	12.00	600.00	36.00	40.00	5.0	4.0	S		0.00		0.00
270212	192.00	M	10.00	0.00	/ /	18.50	50.00	104.33	111.33	6.0	7.0	S		0.00		137.00
270213	400.00	M	10.00	180.00	/ /	250.00	115.00	337.00	767.00	0.0	430.0	X		0.00	SHLE	0.00
270214	315.00		0.00	90.00	/ /	126.50	517.00	143.00	172.00	12.0	29.0	P	R	171.00	SHLE	188.00
270215	410.00	M	10.00	0.00	/ /	0.00	20.00	263.00	273.00	6.0	10.0	S		0.00		273.00
270216	340.00	M	10.00	0.00	/ /	0.00	20.00	221.00	231.00	6.0	10.0	S	S	0.00		231.00
270217	330.00	M	10.00	0.00	/ /	0.00	0.00	162.00	172.00	6.0	10.0	S	S	0.00		178.00
270218	350.00	M	10.00	116.00	/ /	0.00	0.00	135.50	186.75	4.0	51.3	S	P	0.00		0.00
270219	310.00	M	10.00	0.00	/ /	0.00	0.00	95.00	185.00	4.0	90.0	S	P	0.00		0.00
270220	210.00	M	10.00	0.00	/ /	0.00	0.00	0.00	0.00	0.0	0.0			0.00		0.00
270221	450.00	M	10.00	0.00	/ /	0.00	0.00	0.00	0.00	0.0	0.0			0.00		0.00
270222	430.00	M	10.00	0.00	/ /	0.00	0.00	0.00	0.00	0.0	0.0			0.00		0.00

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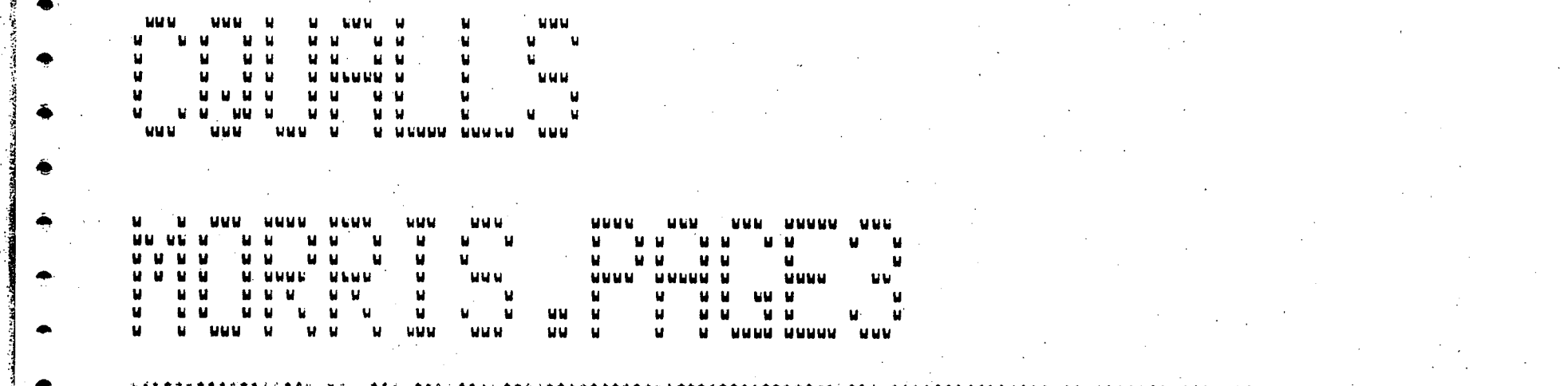

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Started: 86-01-13.14:49:48.Mon on: PR0 by: BIG

U. S. GEOLOGICAL SURVEY TRENTON, NEW JERSEY

SELECTED INFORMATION FROM WELLS IN THE GROUND WATER SITE INVENTORY DATABASE
MORRIS COUNTY

USGS UNIQUE ID	WELL DEPTH	AQUIFER CODE	DATA RELIA-BILITY	HYDRO-LOGIC UNIT	DRILLER	MIN CASING DIA	SITE TYPE	NJDEP PERMIT NUMBER	NJDEP GRID NUMBER	WATER ALLOC NUMBE	STAN INDUS USE	LIFT TYPE	TIME PERIOD PUMPED	SPECIFIC CAPACITY	ALTITUDE WATER LEVEL	MU CI CO
270137	48.67	112SDGV	U	02030103	LAYNE NY CO	24.0	W		2503297		4941	T	0.0	13.31	516.00	34
270138	140.00	112SDGV	U	02030103	LAYNE NY CO	12.0	W		2503525		4941	T	8.0	8.84	557.50	34
270139	84.00	112SDGV	U	02030103	LAYNE NY CO	12.0	W	2505892	2503531		4941	T	8.0	6.27	511.00	34
270140	82.00	112SDGV	U	02030103	LAUMAN, CW	12.0	W		2514565		4941		24.0	0.00	186.00	11
270141	110.00	112SDGV	U	02030103	ARTESIAN CO	16.0	W		2514562		4941		0.0	0.00	0.00	11
270142	103.00	112SDGV	U	02030103	ARTESIAN CO	22.0	W				4941		4.0	18.85	183.00	11
270143	139.00	112SDGV	U	02030103	ARTESIAN CO	14.0	W	2121204	2514562		4941	T	72.0	49.82	163.00	11
270144	128.00	112SDGV	U	02030103	ARTESIAN CO	6.0	W	2501830	2514634		4941		4.0	13.33	131.00	11
270145	102.00	112SDGV	U	02030103	STOTHOFF, WM	12.0	W	2510880			3612		8.0	46.90	189.00	11
270146	203.00	112SDGV	U	02030103	STOTHOFF, WM	8.0	W	2515313		00785	2812		72.0	6.09	267.00	22
270147	115.00	112SDGV	C	02030103	BEATTY, WM	12.0	W	2514205	2514349	05072	4941		48.0	39.47	178.00	10
270148	84.30	112SDGV	C	02030103	RINGRAND CO	12.0	W	2518267	2515112	05072	4941		0.0	0.00	0.00	10
270149	270.00	231BRCK	U	02030103	STOTHOFF, WM	8.0	W	2509640	2515155	05072	4941		8.0	0.52	175.00	10
270150	112.50	112SDGV	C	02030103		2.0	W						0.0	0.00	0.00	5
270151	92.50	112SDGV	C	02030103		2.0	W						0.0	0.00	0.00	5
270152	172.50	112SDGV	C	02030103		2.0	W						0.0	0.00	0.00	17
270153	265.00	231BRCK	U	02030103	BURROWS CO	12.0	W	2514520		01440	4941		0.0	7.27	260.00	24
270154	75.00	112SDGV	U	02030103	KELLY CO	24.0	W				4941	T	96.0	15.38	319.00	29
270155	75.00	112SDGV	U	02030103		24.0	W				4941	T	96.0	15.38	329.00	29
270156	75.00	112SDGV	U	02030103		17.0	W		2514517		4941	T	0.0	0.00	0.00	12
270157	442.00	231BRCK	C	02030103	ARTESIAN CO	12.0	W	2513593			4941		72.0	2.67	295.00	24
270158	94.00	231BRCK	U	02030103	LAUMAN, CW	24.0	W	2502502	2513835		4941		72.0	13.40	296.50	13
270159	0.00		U	02030103		0.0	W				4941		0.0	0.00	0.00	22
270160	144.00	112SDGV	U	02030103	ARTESIAN CO	17.0	W	2503527	2514131		4941		8.0	55.36	258.00	12
270161	496.00	231BRCK	C	02030103	STOTHOFF, WM	12.0	W	2513439			4941		0.0	2.64	251.50	24
270162	118.00	112SDGV	U	02030103	KELLY CO	17.0	W	2500048	2514134		4941	C	72.0	125.00	277.00	12
270163	136.75	112SDGV	C	02030103	LAYNE NY CO	16.0	W		2504579	00383	4941	C	0.0	37.25	284.00	29
270164	138.00	112SDGV	U	02030103	ARTESIAN CO	8.0	W		2504579		4941		0.0	16.78	273.75	29
270165	145.00	112SDGV	C	02030103		16.0	W		2504578		4941		0.0	0.00	301.00	29
270166	75.00	112SDGV	U	02030103		16.0	W		2504677		4941	T	12.0	31.58	270.00	29
270167	75.00	112SDGV	C	02030103	FEAKINS CO	16.0	W		2504588		4941	T	8.0	8.47	287.00	29
270168	150.00	112SDGV	C	02030103	BEATTY, WM	10.0	W		2504588		4941	T	0.0	0.00	0.00	29
270169	150.00	400PCMB	U	02030103	GOULD, LC	8.0	W		2503961		4941		8.0	8.33	362.00	29
270170	195.00	400PCMB	U	02030103	STOTHOFF, WM	8.0	W	2503169	2503961	00780	4941		12.0	2.89	513.00	29
270171	150.00	400PCMB	U	02030103	STOTHOFF, WM	8.0	W	2503168	2503961		4941		12.0	7.05	532.00	29
270172	150.00	400PCMB	U	02030103	STOTHOFF, WM	8.0	W	2503167	2503961		4941		12.0	2.05	550.00	29
270173	90.00	112SDGV	U	02030103	ARTESIAN CO	17.0	W		2505725		4941	U	0.0	0.00	0.00	29
270174	86.00	112SDGV	U	02030103	BURROWS CO	6.0	W						0.0	0.00	0.00	29
270175	65.00	112SDGV	U	02030103	ARTESIAN CO	16.0	W	2507620	2504854		4941		0.0	16.25	273.00	29
270176	60.00	112SDGV	U	02030103		12.0	W				4941	T	0.0	0.00	0.00	29
270177	60.00	112SDGV	U	02030103		12.0	W				4941	T	0.0	0.00	0.00	29
270178	70.00	112SDGV	U	02030103		12.0	W				4941	T	0.0	0.00	0.00	29
270179	80.00	112SDGV	U	02030103		16.0	W				4941	T	0.0	0.00	250.00	29

Depth to Aquifer

SELECTED INFORMATION FROM WELLS IN THE GROUND WATER SITE INVENTORY DATABASE
MORRIS COUNTY

nearest well

USGS UNIQUE ID	WELL DEPTH	AQUIFER CODE	DATA RELIABILITY	HYDRO-LOGIC UNIT	DRILLER	MIN CASING DIA	SITE TYPE	NJDEP PERMIT NUMBER	NJDEP GRID NUMBER	WATER ALLOC NUMBE	STAN INDUS USE	LIFT TYPE	TIME PERIOD PUMPED	SPECIFIC CAPACITY	ALTITUDE WATER LEVEL	MU CI CO
270180	129.00	112SDGV	C	02030103		12.0	W				4941		0.0	0.00	250.00	29
270181	80.00	112SDGV	U	02030103		14.0	W				4941		0.0	0.00	190.00	29
270182	47.00	112SDGV	U	02030103		0.0	W				4941		0.0	0.00	0.00	29
270183	86.42	112SDGV	U	02030103		0.0	W				4941		0.0	0.00	275.00	29
270184	87.00	112SDGV	U	02030103		0.0	W				4941		0.0	0.00	174.00	29
270185	134.00	112SDGV	U	02030103	DE NURE, WM	14.0	W				4941		0.0	0.00	0.00	29
270186	100.00	112SDGV	U	02030103		0.0	W						0.0	0.00	0.00	29
270187	150.00	112SDGV	C	02030103		12.0	W				4941		0.0	4.76	498.00	35
270188	462.00	400PCMB	U	02030103	REILLY, JJ	7.0	W		2504429		4941		0.0	0.00	0.00	25
270189	64.00	112SDGV	U	02030103	KELLY CO	17.0	W		2504178	00248	4941	C	16.0	23.33	485.00	8
270190	64.00	112SDGV	U	02030103	KELLY CO	17.0	W		2504178	00248	4941	C	16.0	29.63	489.00	8
270191	232.00	112SDGV	U	02030103	LAUMAN CO	8.0	W	2514698		01472	4941		0.0	0.00	396.00	25
270192	0.00	231BRCK	U	02030103		6.0	W				8811		5.0	0.45	178.00	21
270193	205.00	231BRCK	U	02030103	PINE BRK CO	6.0	W	2510668			9111		6.0	0.22	186.00	21
270194	0.00	231BSLT	U	02030103		0.0	W				4941		0.0	0.00	0.00	21
270195	290.00	231BSLT	U	02030103		8.0	W				4941		5.0	0.00	0.00	21
270196	293.00	211MRPA	U	02030103	DF WELL CO	8.0	W	2513895		01367	4941		16.0	2.36	120.00	21
270197	112.00	211MRPA	U	02030103	PINE BRK CO	8.0	W				4941	U	8.0	0.58	375.00	21
270198	243.00	112SDGV	U	02030103	BURROWS CO	12.0	W	2213923		01653	4941		72.0	5.44	186.08	21
270199	416.00	400PCMB	U	02030103	ARTESIAN CO	10.0	W	2500621	2504296		3911		8.0	0.08	368.50	2
270200	92.00	112SDGV	U	02030103		6.0	W		2514667				0.0	1.47	180.00	11
270201	104.00	112SDGV	U	02030103		6.0	W	2502193	2514562				0.0	0.00	157.00	11
270202	68.00	112SDGV	U	02030103	STEWART & CO	8.0	W		2514565				0.0	0.00	0.00	11
270203	126.00	112SDGV	U	02030103	ARTESIAN CO	10.0	W		2514941		4941		0.0	48.95	173.00	17
270204	129.00	112SDGV	U	02030103	ARTESIAN CO	10.0	W		2514941		4941		0.0	41.67	175.00	17
270205	140.00	112SDGV	U	02030103	ARTESIAN CO	10.0	W		2514941		4941		0.0	30.59	181.00	17
270206	430.00	231BRCK	U	02030103	LAUMAN CO	8.0	W	2603003		05070			2.0	1.32	175.00	16
270207	60.00	231BRCK	U	02030103	LAUMAN CO	8.0	W	2603029	2601532	05070			0.0	0.00	167.00	16
270208	400.00	231BRCK	U	02030103	LAUMAN CO	8.0	W	2603029		05070			0.0	0.00	165.00	16
270209	600.00	231BRCK	U	02030103	STOTHOFF, WM	12.0	W	2511968	2514455		3612		24.0	1.38	265.00	22
270210	141.00	112SDGV	U	02030103	STOTHOFF, WM	6.0	W	2515105	2513633		8811	S	6.0	7.50	258.00	24
270211	40.00	112SDGV	U	02030103	KNIGHT CO	5.0	W		2514355		3612		0.0	0.00	0.00	10
270212	111.33	112SDGV	U	02030103	LAYNE NY CO	8.0	W		2514356				0.0	0.00	0.00	10
270213	767.00	231BRCK	U	02030103	BOTT, F	6.0	W	2504286	2514438		2812		0.0	1.64	220.00	22
270214	172.00	112SDGV	U	02030103	STOTHOFF, WM	12.0	W	2509253	2514439	2117P	2812	U	24.0	14.16	225.00	22
270215	273.00	112SDGV	U	02030103	DF WELL CO	6.0	W	2518980	2514437				0.0	0.00	0.00	22
270216	231.00	112SDGV	U	02030103	DF WELL CO	6.0	W	2518982	2514438				0.0	0.00	0.00	22
270217	172.00	112SDGV	U	02030103	DF WELL CO	6.0	W	2518984	2514438				0.0	0.00	0.00	22
270218	186.75	112SDGV	U	02030103	LAYNE NY CO	6.0	W						0.0	0.00	234.00	22
270219	185.00	112SDGV	U	02030103	LAYNE NY CO	6.0	W						0.0	0.00	0.00	22
270220	0.00	112SDGV	U	02030103		0.0	W		2514518				0.0	0.00	0.00	12
270221	0.00	112SDGV	U	02030103		0.0	W		2503989				0.0	0.00	0.00	23
270222	0.00	112SDGV	U	02030103		0.0	W		2503989				0.0	0.00	0.00	23

REFERENCE NO. 14

Site Location

SCALE 1:24000

1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 KILOMETER

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

NUS CORPORATION	TITLE: THREE MILE VICINITY MAP	
	SITE: CALVIN KLEIN COSMETICS CORPORATION PARSIPPANY, N.J.	
DATE: 3/17/89		
TDD: 02-8903-07		
QUAD: MORRISTOWN, N.J.	FIGURE NUMBER:	SCALE: 1"= 2000'

REFERENCE NO. 15

PRELIMINARY ASSESSMENT
OFF SITE RECONNAISSANCE
INFORMATION REPORTING FORM

Date: April 4, 1989

Site Name: Calvin Klein Cosmetics TDD: 02-8903-07

Site Address: 345 Walsh Drive
Street, Box, etc.

Parsippany
Town

Morris
County

New Jersey
State

NUS Personnel:

Name	Discipline
Susan Anderson	Environmental Scientist
Gerald Hannay	Biologist
Paul Bauer	Environmetal Scientist

Weather Conditions (clear, cloudy, rain, snow, etc.):

RAIN, cloudy

Estimated wind direction and wind speed: wind from the north

Estimated temperature: 55°

Signature: Susan Anderson Date: 4/4/89

Countersigned: Gerald J Hannay Date: 4/5/89

PRELIMINARY ASSESSMENT

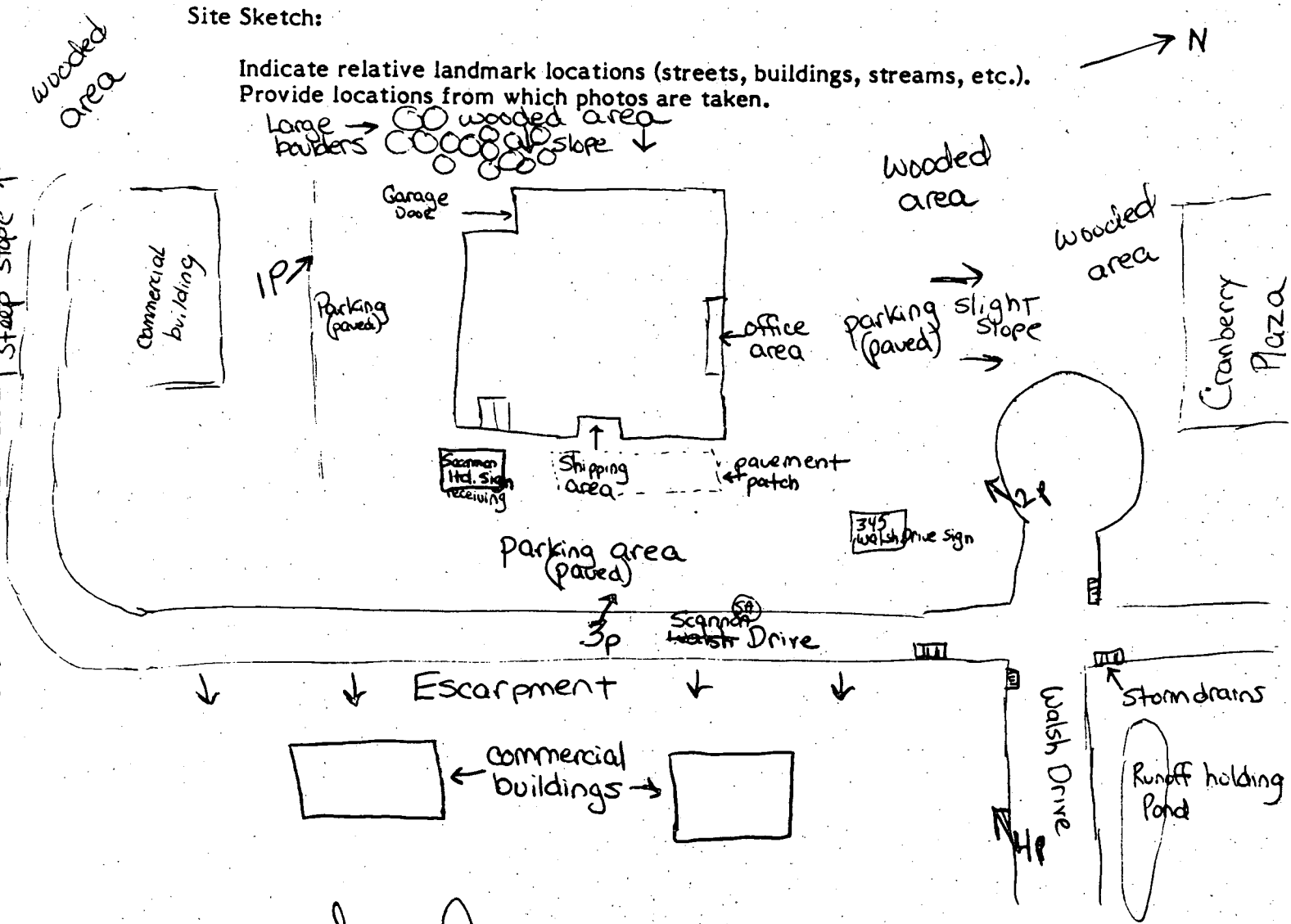
INFORMATION REPORTING FORM

Date: April 4, 1989

Site Name: Calvin Klein Cosmetics TDD: 02-8903-07

Site Sketch:

Indicate relative landmark locations (streets, buildings, streams, etc.).
Provide locations from which photos are taken.



Signature: Susan Anderson Date: 4-4-89

Countersigned: Gerald J. Hannay Date: 4/5/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: April 4, 1989

Site Name: Calvin Klein Cosmetics TDD: 02-8903-07

Notes (Periodically indicate time of entries in military time):

We arrived at Calvin Klein Cosmetics Corp. at 1130. Two signs displayed the identification of the facility: "Scannon Ltd. receiving" and "345 Walsh Drive" (locations shown on site sketch). The facility is located in a commercial complex. The property was clean and landscaped. Cars were parked in the parking area to the north of the building. Behind the facility (west) is a wooded area and a 45° slope with large boulders. The southern side of the building included a parking lot and a garage entrance. The eastern side of the building included a shipping area and a pavement patch where the 12,000-gallon underground hazardous waste storage tank had been located. Located approximately 50 feet east of the site is an escarpment, below the escarpment are commercial buildings. A large holding pond is located east of the site approximately 1000 feet away

Signature: Susan Anderson Date: 4-4-89

Countersignature: Gerald J. Hannay Date: 4/4/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: April 4, 1989

Site Name: Calvin Klein Cosmetics TDD: 02-8903-07

Notes (Cont'd):

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: Susan Anderson Date: 4-4-89

Countersignature: Gerald J. Hannon Date: 4/5/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: April 4, 1989

Site Name: Calvin Klein Cosmetics TDD: 02-8963-07

Photolog:

Frame/Photo Number	Date	Time	Photographer	Description
P9 S9 ~~P9 S9~~	4/4/89	11:32	Paul Bauer	Looking northwest at garage door and wooded area.
P10 S10	4/4/89	11:35	Jeff Hannay	Looking southwest at cars in parking lot and office.
P11 S11	4/4/89	11:40	Paul Bauer	Looking northwest at pavement patch and parking lot.
P12 S12 ~~P12 S12~~	4/4/89	11:45	Jeff Hannay	Looking west at Calvin Klein Cosmetics building

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: Susan Anderson Date: 4-4-89

Countersignature: Gerald J. Hannay Date: 4/5/89

REFERENCE NO. 16

NUS CORPORATION — TELECON NOTE

CONTROL NO:	DATE:	TIME:
02-8902-55	3-20-89	0945

DISTRIBUTION:

TO FILE

BETWEEN:	OF:	PHONE:
MRS. FILIPPONE	PASSAIC RIVER COALITION	(201) 766-7550

AND:

EDMUND KNYFD JR. (NUS)

DISCUSSION:

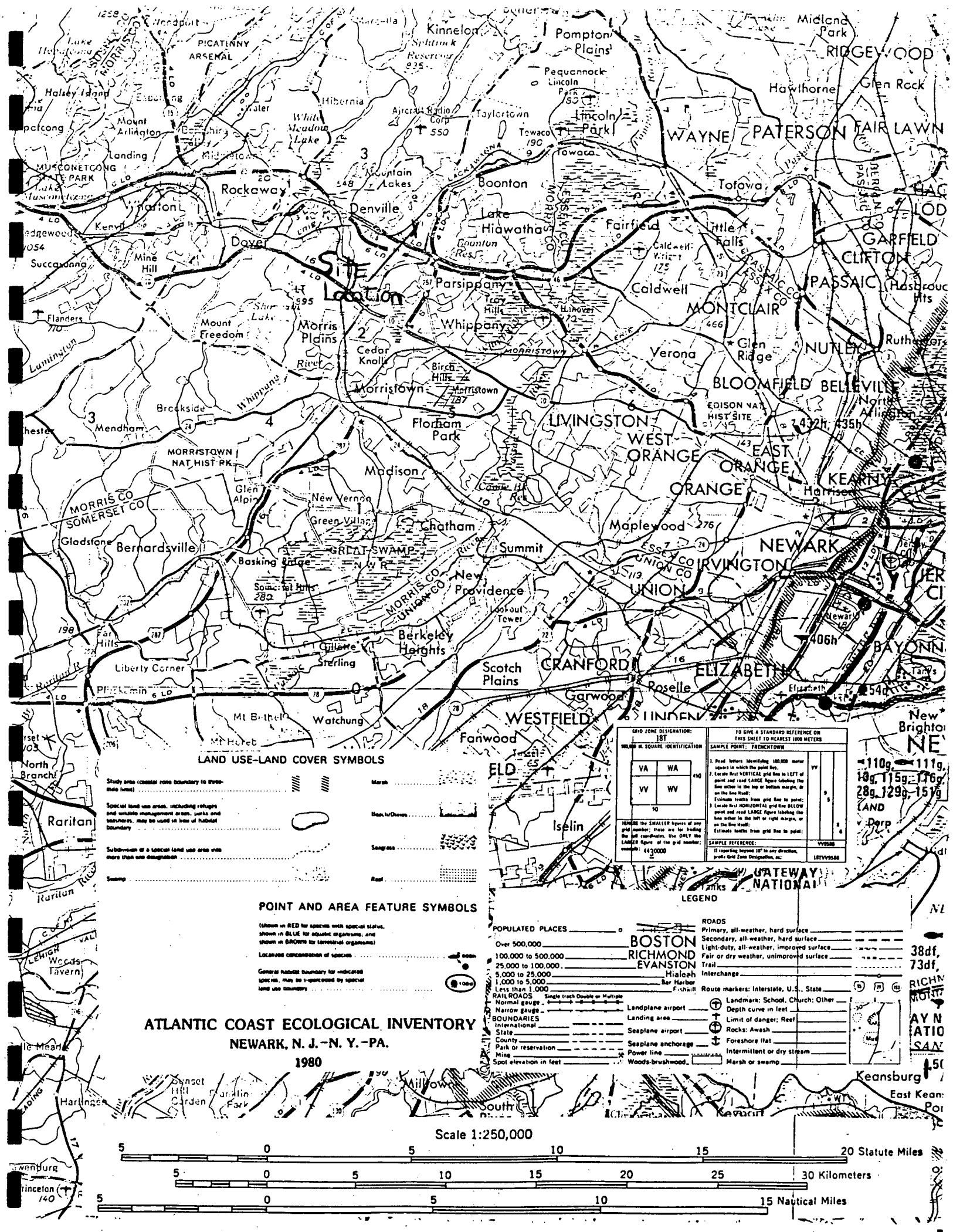
SHE FELT ~~THAT~~ THE MOST PROBABLE USE OF SURFACE WATER WITHIN APPROXIMATELY A 3-MILE RADIUS OF MY SITE WOULD BE FOR RECREATIONAL USES. SHE DID NOT THINK THAT ANY WATER WAS BEING DIVERTED FOR PUBLIC SUPPLY WATER EXCEPT FOR BOONTON RESERVOIR (WHICH IS MORE THAN 3 MILES FROM KEUFFEL + ESSER REDON PLANT. SHE SAID I SHOULD CALL RAYMOND ZABIHACH OF THE MORRIS COUNTY OPEN SPACE COMMISSION TO GET A MORE ACCURATE DESCRIPTION OF SURFACE WATER USE.

Edmund Knyfd Jr. 3-20-89

ACTION ITEMS:

NUS 067 REVISED 0581

REFERENCE NO. 17



LAND USE–LAND COVER SYMBOLS

Study area (coastal zone boundary to three-mile limit)

Special land use areas, including refuges and wildlife management areas, parks and seashores, may be used in lieu of habitat boundary

Subdivision of a special land use area into more than one designation

Swamp

Marsh

Beach/Dunes

Seagrass

Reef

POINT AND AREA FEATURE SYMBOLS

(shown in RED for species with special status, shown in BLUE for aquatic organisms, and shown in BROWN for terrestrial organisms)

Located concentration of species

General habitat boundary for indicated species, may be superceded by special land use boundary

ATLANTIC COAST ECOLOGICAL INVENTORY

NEWARK, N. J.–N. Y.–PA.

1980

GRID ZONE DESIGNATION: 18T

MILGRID M. SQUARE IDENTIFICATION

VA | WA
VV | WV

50 | 450

IGNORE the SMALLER figures of any grid number; these are for finding the grid coordinates. Use ONLY the LARGER figure of the grid number; example: 4430000

TO GIVE A STANDARD REFERENCE ON THIS SHEET TO NEAREST 1000 METERS

SAMPLE POINT: FRENCHTOWN

1. Read letters identifying 100,000 meter square in which the point lies.
2. Locate first VERTICAL grid line to LEFT of point and read LARGE figure labeling the line either to the top or bottom margin, or on the line itself; Estimate tenths from grid line to point;
3. Locate first HORIZONTAL grid line BELOW point and read LARGE figure labeling the line either to the left or right margin, or on the line itself; Estimate tenths from grid line to point;

SAMPLE REFERENCE: VV8586

If reporting beyond 10° in any direction, prefix Grid Zone Designation, as: 18TVV8586

LEGEND

POPULATED PLACES
Over 500,000 — BOSTON
100,000 to 500,000 — RICHMOND
25,000 to 100,000 — EVANSTON
5,000 to 25,000 — Hialeah
1,000 to 5,000 — Bar Harbor
Less than 1,000 — Fishkill

RAILROADS (Single track, Double or Multiple)
Normal gauge
Narrow gauge

BOUNDARIES
International
State
County
Park or reservation
Mine
Spot elevation in feet

Landplane airport
Landing area
Seaplane airport
Seaplane anchorage
Power line
Woods-brushwood

ROADS
Primary, all-weather, hard surface
Secondary, all-weather, hard surface
Light-duty, all-weather, improved surface
Fair or dry weather, unimproved surface
Trail
Interchange
Route markers: Interstate, U.S., State

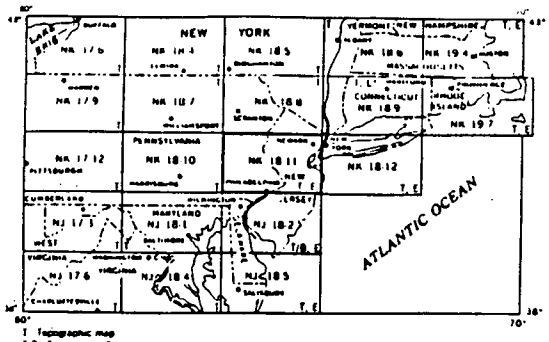
Landmark: School, Church; Other
Depth curve in feet
Limit of danger; Reef
Rocks; Awash
Foreshore flat
Intermittent or dry stream
Marsh or swamp

Scale 1:250,000

5 0 5 10 15 20 Statute Miles

5 0 5 10 15 20 25 30 Kilometers

5 0 5 10 15 Nautical Miles



T Topographic map
T/B - Topographic/Bathymetric map
B - Bathymetric map
E Ecological inventory map
E* - Includes portion of Albany

TERRESTRIAL ORGANISMS

Shown in BROWN, species with special status shown in RED(F) or (S) indicates species protected by Federal or State Legislation (see text)

SYMBOL — SPECIES

PLANTS (301-350)

301 Eastern hemlock
302 Spleenwort (S)
303 Spider lily (S)
304 Pond bush (S)
305 Watermilfoil (S)
306 Hooded pitcher plant (S)
307 Tree
308 Prickly pear cactus (S)
309 Trailing arbutus (S)
310 Eastern burnetia
311 Pitcher plant
312 Baldcypress
313 Reubay
314 Seaside alder
315 Bog huckleberry
316 Purple fringeless orchid
317 Pink lady's slipper
318 Ebony spleenwort (S)
319 Orchids (S)
320 Golden club (S)
321 Florida beargrass
322 East-coast coontie
323 Fall-flowering rose
324 Jackson-vine
325 Spoon-flower
326 Curtiss milkweed
327 Sea lavender
328 Hand fern
329 Needle palm
330 Yellow squirrel-banana
331 Beach creeper
332 Florida coontie
333 Four-petal pawpaw
334 Bird's nest spleenwort
335 Burrowing four-o'clock
336 Beach star
337 Silver palm
338 Dancing lady orchid
339 Tamarindillo
340 Fuch's bromeliad
341 Everglades peperomia
342 Buccaneer palm
343 Slender spleenwort
344 Pineland jacquemontia
345 Mahogany mistletoe
346 Florida thatch
347 Twisted air plant
348 Long's bittercress
349 Venus's flytrap

INVERTEBRATES (351-400)

351 Monarch butterfly
352 Zebra butterfly

BIRDS (401-600)

SHOREBIRDS (401-430)

401 Shorebirds
402 Terns
403 Gulls
404 Forster's tern
405 Arctic tern
406 Least tern (S)
407 Roseate tern (S)
408 Common tern
409 Great black-backed gull
410 Herring gull
411 Laughing gull
412 Black skimmer (S)
413 Turnstones
414 Plovers
415 Piping plover
416 American oystercatcher (S)

WADING BIRDS (431-460)

431 Wading birds
432 Herons
433 Egrets
434 Rails
435 Ibises
436 Bitterns
437 Great blue heron (S)
438 Wood ibis (S)
439 Anhinga
440 Little blue heron (S)
441 Yellow-crowned night heron (S)
442 Black-crowned night heron
443 Florida sandhill crane (S)
444 Louisiana heron (S)
445 Limpkin (S)
446 Roseate spoonbill (S)
447 Snowy egret (S)
448 Magnificent frigate-bird (S)
449 Reddish egret (S)
450 Clapper rail
451 King rail
452 Virginia rail
453 Sora rail

WATERFOWL (461-500)

461 Waterfowl
462 Swans
463 Geese
464 Dabbling ducks
465 Diving ducks
466 Common eider
467 Harlequin duck
468 Wood duck
469 Fulvous tree duck
470 Loons
471 Grebes
472 Brant geese
473 Snow goose
474 Gadwall
475 Black duck

RAPTORS (501-530)

501 Raptors
502 Owls
503 Kites
504 Hawks
505 Bald eagle (F)
506 Osprey (S)
507 Peregrine falcon (F)
508 Cooper's hawk (S)
509 Swallow-tailed kite
510 Marsh hawk (S)
511 Southeastern American kestrel (S)
512 Florida burrowing owl (S)

SEABIRDS (531-550)

531 Seabirds
532 Petrels, shearwaters, and albatrosses
533 Pelican and allies
534 Alcids
535 Brown pelican (F)
536 Black guillemot
537 Leach's petrel
538 Razorbill
539 Common puffin
540 Double-crested cormorant
541 Gannet
542 Wilson's petrel
543 Northern phalarope
544 Audubon's shearwater
545 Greater shearwater
546 Shearwaters
547 Petrels
548 Jaegers
549 White pelican

SONGBIRDS AND OTHERS (551-600)

551 Songbirds and others
552 Red-cockaded woodpecker (F)
553 Chachalaca
554 Bachman's warbler (F)
555 Wild turkey
556 American woodcock
557 Pileated woodpecker
558 Swainson's warbler
559 Ruffed grouse
560 Bobwhite
561 Mourning dove
562 Warblers
563 Ring-necked pheasant
564 Bank swallow
565 Dusky seaside sparrow (F)
566 White-crowned pigeon (S)

REPTILES AND AMPHIBIANS (601-700)

601 Eastern narrow-mouthed toad (S)
602 Eastern indigo snake (F)
603 American alligator (F)
604 Northern diamondback terrapin
605 Amphisbaens
606 Greater siren
607 Bog turtle (S)
608 Gopher tortoise (S)
609 Eastern tiger salamander (S)
610 Northern fence lizard
611 Five-lined skink
612 Map turtle
613 Plymouth red-bellied turtle (F)
614 Eastern diamondback rattlesnake
615 Carolina gopher frog
616 Florida gopher frog (S)
617 Atlantic salt marsh watersnake (F)
618 American crocodile (F)
619 Florida Keys mole skink (S)
620 Florida black-headed snake (S)
621 Pine barrens tree frog (S)
622 Northern pine snake (S)
623 Corn snake (S)
624 Timber rattlesnake (S)
625 Southern gray tree frog (S)

MAMMALS (701-800)

701 Beaver
702 Whitetail deer
703 European fallow deer
704 Blackbeard Island deer
705 Opossum
706 Marsh rabbit
707 Rice rat
708 Raccoon
709 St. Simon Island raccoon
710 Mink
711 River otter (F)
712 Feral hog
713 Feral cow
714 Cumberland Island pocket gopher
715 Anastasia Island cotton mouse
716 Aquatic furbearers
717 Black bear (S)
718 Bobcat
719 Eastern gray squirrel
720 Eastern fox squirrel
721 Eastern cottontail
722 Delmarva fox squirrel (F)
723 Muskrat
724 Red fox
725 Bats
726 Gray fox
727 Striped skunk
728 Nutria
729 Longtail weasel
730 Colonial pocket gopher (S)
731 Wild pigs
732 Sika deer
733 Beach meadow vole
734 Block Island meadow vole
735 Pallid beach mouse (S)
736 Sherman's fox squirrel (S)
737 Florida mouse (S)
738 Florida panther (F)
739 Gulf's sea-bat graphic (S)
740 Key Largo wood rat (S)
741 Lower keys cotton rat (S)
742 Key Largo cotton mouse (S)

HABITAT USE

Shown in RED for species with special status, BLUE for aquatic organisms and BROWN for terrestrial organisms

a Spawning ground
b Nursery
c Commercial harvesting area
d Adult concentration
e Overwintering area
f Sport fishing/hunting area
g Migratory area
h Nesting area
i Unusual distribution or specimen

AQUATIC ORGANISMS

Shown in BLUE; species with special status shown in RED(F) or (S) indicates species protected by Federal or State Legislation (see text)

SYMBOL — SPECIES

PLANTS (1-50)

1 Irish moss
2 Rockweed

INVERTEBRATES (51-100)

51 Crabs
52 Mussels
53 Oysters
54 Scallops
55 Clams
56 Worms
57 Shrimp
58 American lobster
59 Blue crab
60 Eastern oyster
61 European oyster
62 Bay scallop
63 Deep-sea scallop
64 Calico scallop
65 Surf clam
66 Hard clam
67 Soft shell clam
68 Brackish-water clam
69 Bloodworm
70 Sandworm
71 White shrimp
72 Brown shrimp
73 Northern shrimp
74 Rock crab
75 Jonah crab
76 Whelk
77 Ocean quahog
78 Pink shrimp
79 Stone crab
80 Spiny lobster

FISH (101-200)

101 Sharks, skates, rays
102 Herring
103 Salmon and trout
104 Catfish
105 Cod
106 Sunfish and bass
107 Drum
108 Flatfish
109 Longnose gar
110 Shortnose sturgeon (F)
111 Atlantic sturgeon (S)
112 American eel
113 Blueback herring
114 Hickory shad
115 Alewife
116 American shad (S)
117 Atlantic menhaden
118 Atlantic herring
119 Gizzard shad
120 Tarpon
121 Atlantic salmon
122 White catfish
123 Channel catfish
124 Yellow bullhead
125 Brown bullhead
126 Flat bullhead
127 Sea catfish
128 White perch
129 Striped bass
130 Black sea bass
131 Redbreast sunfish
132 Warmouth
133 Bluegill
134 Largemouth bass
135 Black crappie
136 Sheepshead
137 Spotted seatrout
138 Weakfish
139 Spot
140 Atlantic croaker
141 Southern kingfish
142 Northern kingfish
143 Gulf kingfish
144 Red drum
145 Star drum
146 Black drum
147 Summer flounder
148 Southern flounder
149 Winter flounder
150 Rainbow smelt
151 Atlantic tomcod
152 Threadfin shad
153 Carp
154 Atlantic mackerel
155 Chain pickerel
156 White bass
157 Northern puffer
158 Silver perch
159 Florida pompano
160 Bluefish
161 Spanish mackerel
162 Cobia
163 Mullet
164 White crappie
165 Redear sunfish
166 Smallmouth bass
167 Yellow perch
168 Pumpkinseed
169 Atlantic halibut
170 Atlantic cod
171 Pollock
172 Haddock
173 Hake
174 Bluefin tuna
175 Walleye
176 Northern pike
177 Scup
178 Tautog
179 Atlantic spadefish
180 Bay anchovy
181 Butterfish
182 Little tunny
183 Atlantic bonito
184 Brown trout
185 Cunner
186 Yellowtail flounder
187 Gulf flounder
188 Pinfish
189 King mackerel
190 Pigfish
191 White grunt
192 Tripletail
193 Ladyfish
194 Snook
195 Jack
196 Snapper
197 Grouper
198 Sailfish
199 Great barracuda
200 Maryland darter (F)

REPTILES AND AMPHIBIANS (201-250)

201 Green sea turtle (F)
202 Loggerhead sea turtle (F)
203 Hawksbill turtle (F)
204 Atlantic ridley turtle (F)
205 Leatherback turtle (F)

MAMMALS (251-300)

251 Florida manatee (F)
252 Atlantic bottlenose dolphin
253 Dwarf sperm whale
254 Short finned pilot whale
255 Harbor seal
256 Gray seal
257 Right whale (F)
258 Atlantic spotted dolphin

High salinity estuarine habitat (generally 16.5 to 40 parts per thousand), proven used for wide estuaries.

Mid salinity estuarine habitat (generally 5 to 16.5 parts per thousand).

Low salinity estuarine habitat (generally 0.5 to 5 parts per thousand) and tidal freshwater.

Non-tidal freshwater riverine and creek habitat.

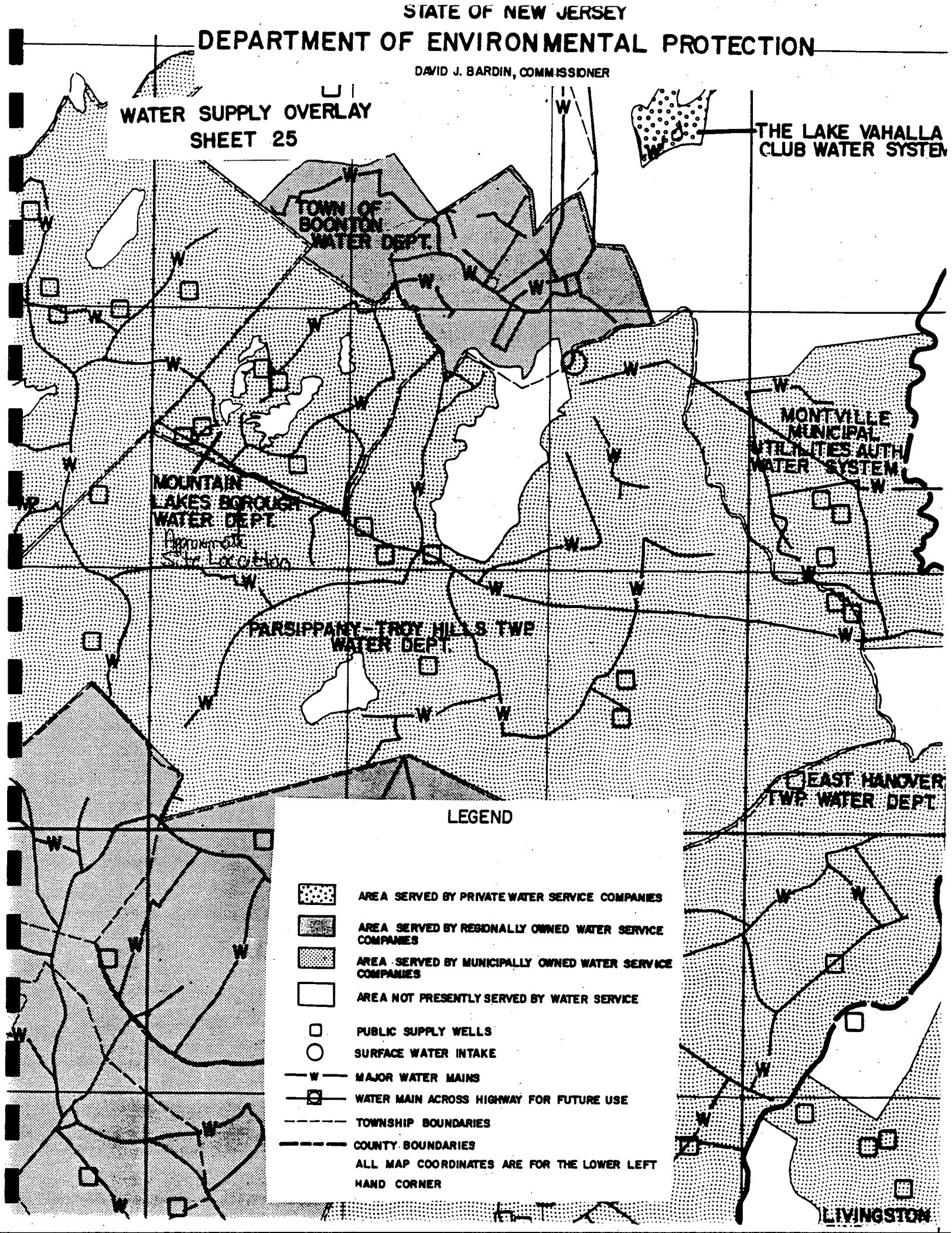
REFERENCE NO. 18

STATE OF NEW JERSEY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DAVID J. BARDIN, COMMISSIONER

WATER SUPPLY OVERLAY SHEET 25



LEGEND

- AREA SERVED BY PRIVATE WATER SERVICE COMPANIES
- AREA SERVED BY REGIONALLY OWNED WATER SERVICE COMPANIES
- AREA SERVED BY MUNICIPALLY OWNED WATER SERVICE COMPANIES
- AREA NOT PRESENTLY SERVED BY WATER SERVICE
- PUBLIC SUPPLY WELLS
- SURFACE WATER INTAKE
- MAJOR WATER MAINS
- WATER MAIN ACROSS HIGHWAY FOR FUTURE USE
- TOWNSHIP BOUNDARIES
- COUNTY BOUNDARIES

ALL MAP COORDINATES ARE FOR THE LOWER LEFT HAND CORNER

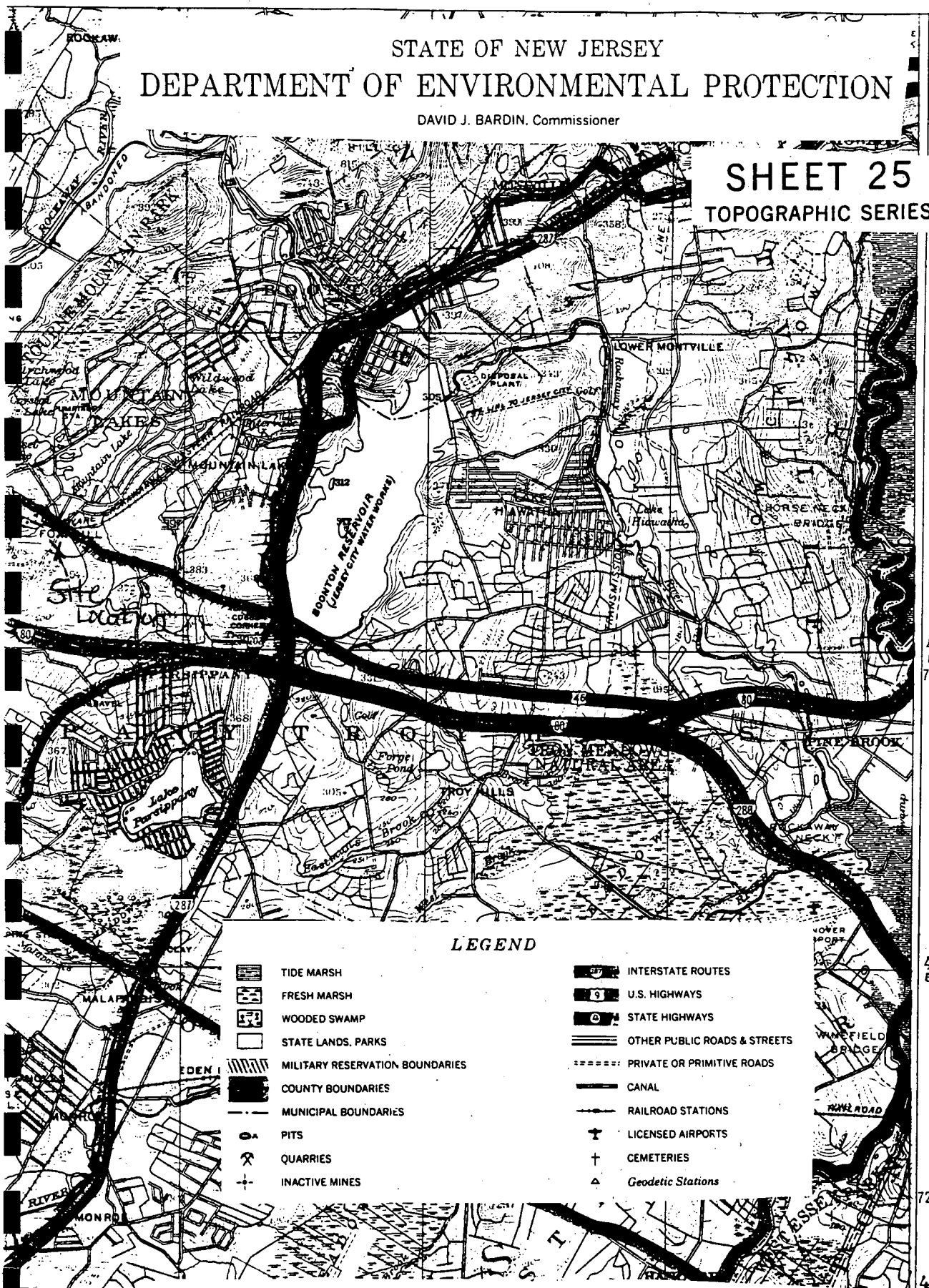
STATE OF NEW JERSEY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DAVID J. BARDIN, Commissioner

SHEET 25

TOPOGRAPHIC SERIES



LEGEND

TIDE MARSH	INTERSTATE ROUTES
FRESH MARSH	U.S. HIGHWAYS
WOODED SWAMP	STATE HIGHWAYS
STATE LANDS, PARKS	OTHER PUBLIC ROADS & STREETS
MILITARY RESERVATION BOUNDARIES	PRIVATE OR PRIMITIVE ROADS
COUNTY BOUNDARIES	CANAL
MUNICIPAL BOUNDARIES	RAILROAD STATIONS
PITS	LICENSED AIRPORTS
QUARRIES	CEMETERIES
INACTIVE MINES	*Geodetic Stations*

Scale: 1 Mile to an Inch

Miles: 1 ¾ ½ ¼ 0 1 2 3

Yards: 1000 500 0 1000 2000 3000

Meters: 1000 500 0 1000 2000 3000

1:63,360

A. HOEN & CO. BALTIMORE, MD

REFERENCE NO. 19

NUS CORPORATION — TELECON NOTE

CONTROL NO:	DATE:	TIME:
02-8903-07	March 28, 1989	0916

DISTRIBUTION:

To File

BETWEEN:	OF:	PHONE:
Raymond Zabihach	Morris County Open Space Commission	(201) 285-1667

AND: Susan Anderson (NUS)

DISCUSSION:

Mr. Zabihach said Troy Brook does not discharge into the Boonton Reservoir, but flows further downstream and intercepts the Rockaway and Passaic rivers. He also mentioned that Troy Brook flows through the wetlands

ACTION ITEMS:

NUS 067 REVISED 0581

REFERENCE NO. 20

GSC-TR8645

GRAPHICAL EXPOSURE MODELING SYSTEM

(GEMS)

USER'S GUIDE

VOLUME 2. MODELING

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDES AND TOXIC SUBSTANCES
EXPOSURE EVALUATION DIVISION
Task No. 3-2
Contract No. 68023970
Project Officer: Russell Kinerson
Task Manager: Loren Hall

Prepared by:

GENERAL SCIENCES CORPORATION
8401 Corporate Drive
Landover, Maryland 20785

Submitted: December 1, 1986

GEMS> I

CALVIN KLEIN CORP
LATITUDE 40:52:25 LONGITUDE 74:27: 5 1980 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	1325	1833	24088	19160	45282	91688
RING TOTALS	0	1325	1833	24088	19160	45282	91688

GEMS> I

CALVIN KLEIN CORP
LATITUDE 40:52:25 LONGITUDE 74:27: 5 1980 HOUSING

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	497	549	8101	6158	14926	30231
RING TOTALS	0	497	549	8101	6158	14926	30231

Distance	Population	Housing
1/4	0	0
1/2	1,325	497
1	3,158	1,046
2	27,246	9,147
3	46,406	15,305
4	91,688	30,231

REFERENCE NO. 21

Surface Water Classifications

Surface Water Quality Standards
N.J.A.C. 7:9-4

Index D-
Surface Water Classifications of the Passaic, Hackensack and N.Y. Harbor Complex Basin

July 1985

State of New Jersey Department of Environmental Protection/Division of Water Resources

(Linden) - Penn. Railroad bridge to Route 1&9 crossing	SE2
(Carteret) - Route 1-9 crossing to mouth	SE3
RAMAPO LAKE (Ramapo) - Lake and all outlet streams and tributaries within the boundaries of Ramapo Mtn. State Forest	FW2-NT(C1)
RAMAPO RIVER (Oakland) - State line to Pompton River	FW2-NT
RINGWOOD CREEK	
(Ringwood) - Entire length, except segment described below	FW2-TM
(Sloatsburg) - Creek within Ringwood State Park	FW2-TM(C1)
RINGWOOD MILL POND (Ringwood)	FW2-NT(C1)
ROCKAWAY RIVER	
(Dover) - Source to Passaic River, excluding the Jersey City Reservoir and the segment described below	FW2-NT
(Berkshire Valley) - That segment within the boundaries of the Berkshire Valley Wildlife Management Area	FW2-NT(C1)
RUSSIA BROOK	
(Sparta) - Source to Lake Hartung dam	FW2-NT
(Milton) - Lake Hartung dam to, but not including, Lake Swannanoa	FW2-TM
SADDLE RIVER	
(Upper Saddle River) - State line to Bergen County Rt. 2 bridge	FW2-TP(C1)
(Saddle River) - Bergen County Rt. 2 bridge to Allendale Rd. bridge	FW2-TM
(Lodi) - Allendale Rd. bridge to Passaic River	FW2-NT/SE3
SAWMILL CREEK (Pompton Plains) - Entire length	FW2-NT
SHEPPARD LAKE (Ringwood)	FW2-TM(C1)
SINGAC BROOK - See PREAKNESS BROOK	
SLOUGH BROOK (Livingston) - Entire length	FW2-NT
SMITH CREEK - Entire length	FW2-NT/SE2
SPLIT ROCK RESERVOIR (Rockaway)	FW2-TM
SPLIT ROCK RESERVOIR TRIBUTARIES (Farny State Park) - Three tributaries within Farny State Park	FW2-NT(C1)
SPRING GARDEN BROOK (Florham) - Entire length	FW2-NT
STAG [CLOVE] BROOK (Mahwah) - Entire length	FW2-TP(C1)
STEPHENS BROOK	
(Roxbury) - Entire length, except segment described separately, below	FW2-NT
(Berkshire Valley) - That segment north of the boundaries of the Berkshire Valley Tract	FW1
STONE HOUSE BROOK (Kinnelon) - Entire length	FW2-NT
STONY BROOK (Boonton) - Entire length	FW2-NT
SUPRISE LAKE (Hewitt)	FW1
SWAN POND (Ringwood)	FW2-NT(C1)
TENAKILL BROOK (Demarest) - Entire length	FW2-NT
TERRACE POND (Wawayanda)	FW2-NT(C1)
TIMBER BROOK (Charlotteburg) - Headwater segment of tributary to Timber Brook within Farny State Park	FW2-TM(C1)
→TROY BROOK (Troy Hills) - Entire length	FW2-NT
WANAQUE RESERVOIR	FW2-TM

REFERENCE NO. 22

SURFACE WATER QUALITY STANDARDS

N.J.A.C. 7:9-4.1 et seq.

May 1985

New Jersey Department of Environmental Protection/Division of Water Resources

specified test conditions, based on the results of an acute bioassay.

"Limiting nutrient" means a nutrient whose absence or scarcity exerts a restraining influence upon an aquatic biological population.

"MA7CD10" means the minimum average 7 consecutive day flow with a statistical recurrence interval of 10 years.

"Measurable changes" means changes measured or determined by a biological, chemical, physical analytical method, conducted in accordance with USEPA approved methods as identified in 40 C.F.R. 136 or other analytical methods (for example, mathematical models, ecological indices, etc.) approved by the Department, that might adversely impact a water use (including, but not limited to aesthetics).

"Mixing zones" means localized areas of surface waters, as may be designated by the Department, into which wastewater effluents may be discharged for the purpose of mixing, dispersing, or dissipating such effluents without creating nuisances or hazardous conditions, or violating the provisions of this subchapter.

"Natural flow" means the water flow that would exist in a waterway without the addition of flow of artificial origin.

"Natural water quality" means the water quality that would exist in a waterway or a waterbody without the addition of water or waterborne substances from artificial origin.

"NJPDES" means New Jersey Pollutant Discharge Elimination System.

"NOEC" means the "no observable effect concentration", which is the highest concentration of a toxic substance that has no adverse effect(s) on survival, growth, or reproduction of species based upon the results of chronic toxicity testing.

"Nondegradation waters" means those waters set aside for posterity because of their clarity, color, scenic setting, other characteristic of aesthetic value, unique ecological significance, exceptional recreational significance, or exceptional water supply significance. These waters include all waters designated as FW1 in this subchapter.

"Nonpersistent" means degrading relatively quickly, generally having a half-life of less than 96 hours.

→ "Nontrout waters" means fresh waters that have not been designated in this subchapter as trout production or trout maintenance. These waters are generally not suitable for trout because of their physical, chemical, or biological

characteristics, but are suitable for a wide variety of other fish species.

"NPDES" means National Pollutant Discharge Elimination System.

→"NT" means nontrout waters.

"Nutrient" means a chemical element or compound, such as nitrogen or phosphorus, which is essential to and promotes the growth and development of organisms.

"Outstanding National Resource Waters" means high quality waters that constitute an outstanding national resource (for example, waters of National/State Parks and Wildlife Refuges and waters of exceptional recreational or ecological significance) as designated in Index G incorporated into this subchapter.

"Persistent" means relatively resistant to degradation, generally having a half life of over 96 hours.

"Pinelands waters" means all waters within the boundaries of the Pineland Area, except those waters designated as FW1 in this subchapter, as established in the Pinelands Protection Act N.J.S.A. 13:18A-1 et seq. and shown on Plate 1 of the "Comprehensive Management Plan" adopted by the New Jersey Pinelands Commission in November 1980.

"PL" means the general surface water classification applied to Pinelands Waters.

"Primary contact recreation" means recreational activities that involve significant ingestion risks and includes, but is not limited to, wading, swimming, diving, surfing, and water skiing.

"Public hearing" means a legislative type hearing before a representative or representatives of the Department providing the opportunity for public comment, but does not include cross-examination.

"River mile" means the distance, measured in statute miles, between two locations on a stream, with the first location designated as mile zero. Mile zero for the Delaware River is located at the intersection of the centerline of the navigation channel and a line between the Cape May Light, New Jersey, and the tip of Cape Henlopen, Delaware.

"Saline waters" means waters having salinities generally greater than 3.5 parts per thousand at mean high tide.

"SC" means the general surface water classification applied to coastal saline waters.

"SE" means the general surface water classification applied to saline waters of estuaries.

→(c) In all FW2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;

2. Primary and secondary contact recreation;

3. Industrial and agricultural water supply;

4. Public potable water supply after such treatment as required by law or regulation; and

5. Any other reasonable uses.

(d) In all SE1 waters the designated uses are:

1. Shellfish harvesting in accordance with N.J.A.C. 7:12;

2. Maintenance, migration and propagation of the natural and established biota;

3. Primary and secondary contact recreation; and

4. Any other reasonable uses.

(e) In all SE2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;

2. Migration of diadromous fish;

3. Maintenance of wildlife;

4. Secondary contact recreation; and

5. Any other reasonable uses.

(f) In all SE3 waters the designated uses are:

1. Secondary contact recreation;

2. Maintenance and migration of fish populations;

3. Migration of diadromous fish;

4. Maintenance of wildlife; and

5. Any other reasonable uses.

(g) In all SC waters the designated uses are:

1. Shellfish harvesting in accordance with N.J.A.C. 7:12;